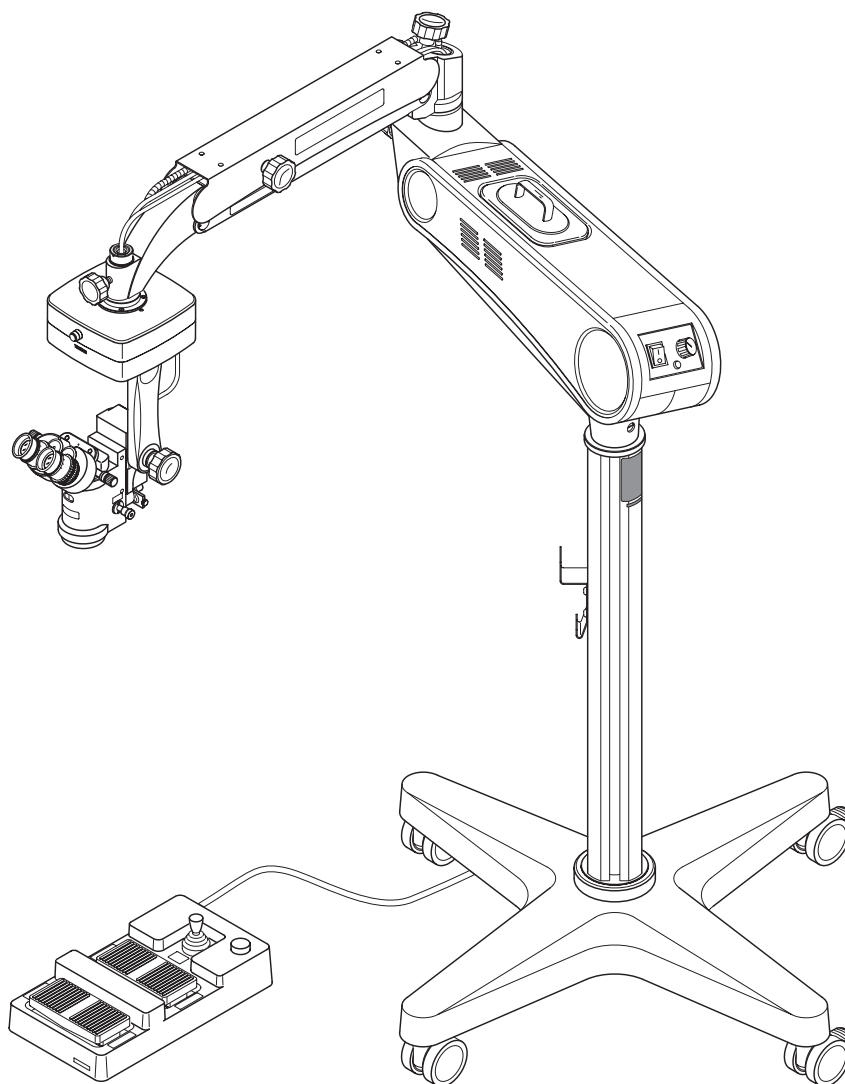




Operating Microscope

MODEL OM-8

Instruction Manual



OM8-T01

We would like to thank you for purchasing our Operating Microscope. Read this manual thoroughly before use, understand the contents, and handle this instrument safely and correctly

- Do not use this instrument in any other way than described in this manual.
- Keep this manual handy for future reference.
- Contact our distributor or our Sales Department if this manual is lost or damaged.

Overview

■ Product Overview and Usage



- Do not operate this instrument unless you are an ophthalmologist or a trained operator.
- Do not disassemble or modify this instrument. This may cause an accident or product failure.

1. OM-8 Operating microscope is an instrument to see a magnified examinee's eyeball and its surroundings for operation.

■ Classification of Devices

- Classification of equipment by 93/42/EEC Annex IX

Rule	Rule 12
Class	Class I

■ Product Life Span

- The life span of this instrument is eight years. Note that this only applies where the instrument is used in an appropriate environment and where it is serviced and maintained as prescribed.

■ Disposal

- If disposing of the projection lamps and fuses, do so in accordance with the laws and regulations of your country and local authority.
- If disposing of the packing materials, sort them first, and then do so in accordance with the laws and regulations of your country and local authority.
- If disposing of the instrument, do so in accordance with the laws and regulations of your country and local authority, or contact our distributor or our sales department.

Precautions for Use

Precautions for use of electrical medical instruments (for safety and hazard prevention)




Precautions for Use

1. Do not use this instrument unless you are an experienced operator.
2. Note the following points upon installation:
 - (1) Do not install the instrument in a place where water may be splashed on it.
 - (2) Do not install the instrument in a place that may affect the performance of it due to abnormal atmospheric pressure, temperature or humidity as well as poor ventilation, exposure to direct sunlight, dust or air containing salt or sulfur.
 - (3) Be sure that the instrument is installed on a stable surface; Do not install it on a sloping surface or in a place subject to vibration or impact. (Also, avoid impact in transport.)
 - (4) Do not install the instrument in a place where chemicals are stored or where it may be exposed to gas.
 - (5) Make sure that the power source voltage and the allowable current or consumable power are appropriate.
 - (6) Be sure to properly connect to the earth.
 - (7) Note that the outside of the lamp housings can become hot.
3. Note the following points prior to use:
 - (1) Check that control knobs and buttons function properly, and that the instrument operates normally.
 - (2) Check that the earth is fully connected.
 - (3) Check that all cords and cables are properly and safely connected.
 - (4) Confirm that all of the parts are functioning normally and safely.
 - (5) Immobilize the OM-8 using the stoppers (casters) and the various lock handles.
 - (6) Disinfect or take other measures as necessary.
4. Note the following points during use:
 - (1) Use minimum illumination intensity required throughout the examination process: this will not only reduce the discomfort of the examinee due to the glare but also extend the life of the lamps.
 - (2) Constantly monitor that the instrument is operating normally and that the examinee is not in discomfort.
 - (3) Where any abnormality is found in the instrument or the examinee, take necessary actions such as making sure that the examinee is safe and turning the instrument off.
 - (4) During use, never loosen the balance adjustment handle or the vertical movement lock handle.
5. Note the following points after use:
 - (1) Following use, be sure to turn off the power switch.
 - (2) When unplugging the power cord or other cables, be sure to do so by holding the plug and pulling it out so that the power cord or cables are not strained.
 - (3) Following use, be sure to protect the OM-8 by covering it with the dust cover.
 - (4) When moving the OM-8, lock all of the lock handles and be careful not to bump it into anything.
6. Note the following points upon storage:
 - (1) Do not store the instrument in a place where water may be splashed on it.
 - (2) Do not store the instrument in a place that may affect the condition of it due to abnormal atmospheric pressure, temperature or humidity as well as poor ventilation, exposure to direct sunlight, dust or air containing salt or sulfur.
 - (3) Be sure that the instrument is stored on a stable surface; Do not store it on a sloping surface or in a place subject to vibration or impact. (Also, avoid impact in transport.)
 - (4) Do not store the instrument in a place where chemicals are stored or where it may be exposed to gas.
 - (5) Clean the instrument prior to storing so that it stays in good condition till it is required next time.
7. Note the following points upon maintenance:
 - (1) Open the lamp housings only when replacing lamps. There are no other user-serviceable parts inside the instrument.
 - (2) When replacing lamps, turn the OM-8 power off, and wait till the lamps are cool enough to handle.
 - (3) Servicing the instrument or replacing its parts shall only be performed by our authorized experienced technicians. We are not liable for any damages caused due to servicing or repairing done by unauthorized personnel. Ovidem quunt voleste vella pro es moluptatur sunt acimusc ipicitatem labo. Itatem eos eum facessi mporrum lita doloribus.

Safety Precautions

■ Warning Symbols Used in Manual and on Instrument

- The warning symbols used in this manual and on the instrument are described below. Understand their meaning, and use the instrument correctly.

 WARNING	● This symbol indicates a potentially hazardous situation which could result in death or serious injury if the instrument is misused.
 CAUTION	● This symbol indicates a potentially hazardous situation which may result in injury or property damage without involving bodily injury if the instrument is misused.
	● This symbol prompts user's attention.



Notes - Installation

- Do not install the instrument in the environment listed below. Instrument failure or personal injury may result.
 - 1) in a humid or dusty place
 - 2) near water
 - 3) in a place exposed to direct sunlight
 - 4) in a place exposed to corrosive gas
 - 5) on an unstable surface
 - 6) near thermal appliances
- Install the instrument on a level surface.



Notes - Before Use

- Check that the instrument operates normally.



Notes - During Use

- In the event of instrument malfunction, turn the power off immediately, and contact our distributor or us.
- Use the instrument only with the prescribed power supply voltage. Otherwise, instrument failure may result.
- Do not let any fluid or foreign object get inside the instrument. This may cause instrument failure.



Notes - Maintenance

- Do not use organic solvent (such as thinner, benzene, acetone, toluene, and ethyl acetate) or bleach to clean the instrument. This may damage the painted surfaces or the resin components.
- Turn the instrument power off, and unplug the power cord from the outlet prior to maintenance work or replacing of consumables.
- Do not unplug the power cord by pulling the cord itself.

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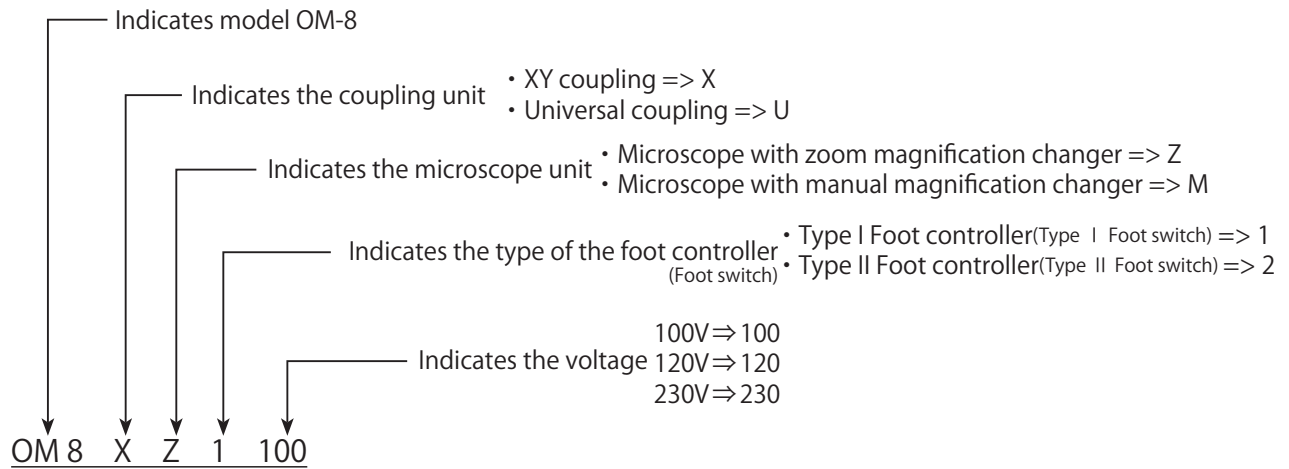
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Identification

ID Number

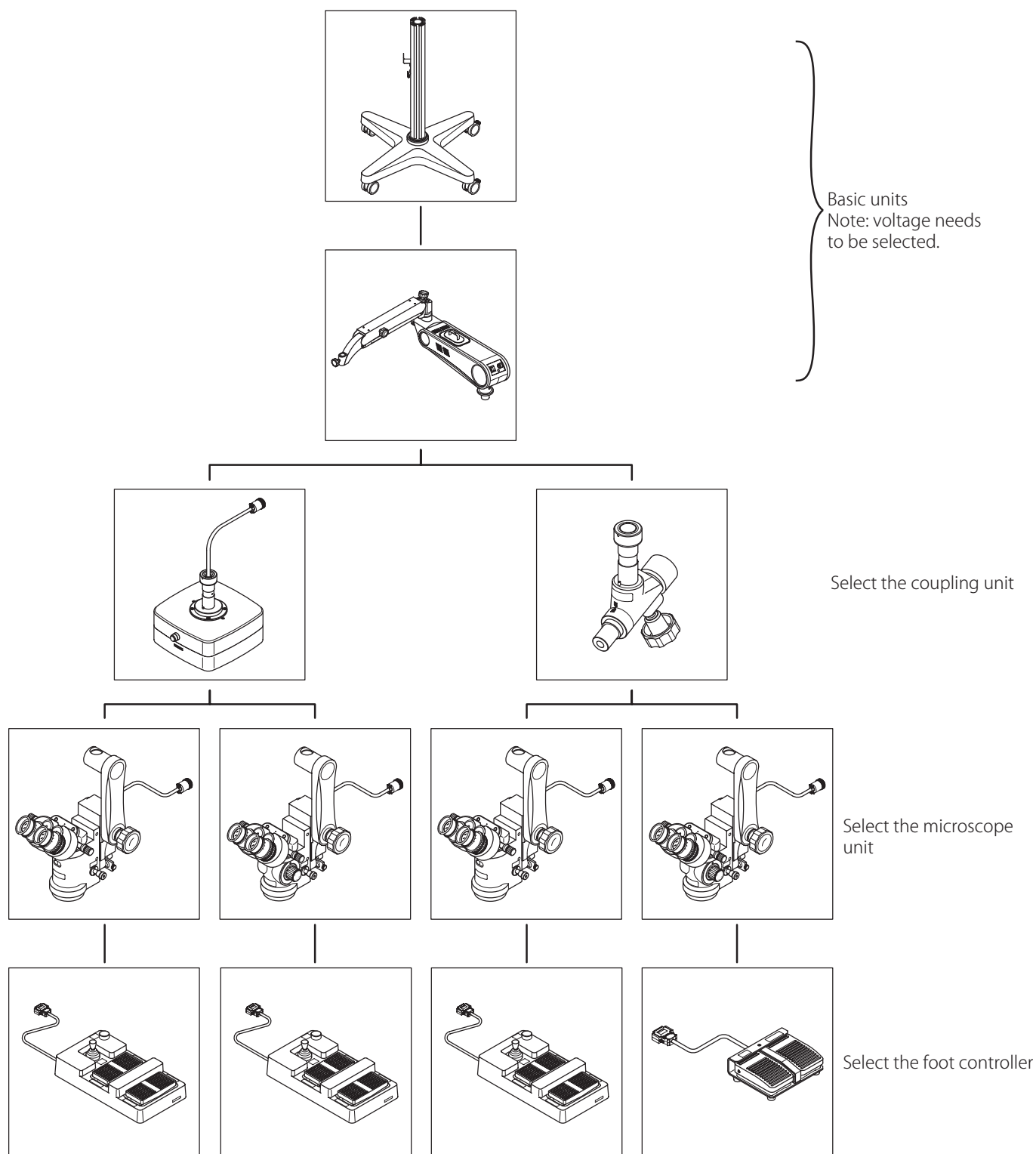
- ID number of this instrument is distinguished according to combinations of each unit.
- ID number does not include optional accessories. There are four types of basic compositions excluding difference of voltages.



No.	I D	Basic units	Coupling unit	Microscope unit	Type of foot controller	Voltage
①	OM8XZ1100	○	X-Y	ZOOM	Type I	100V
	OM8XZ1120	○	X-Y	ZOOM	Type I	120V
	OM8XZ1230	○	X-Y	ZOOM	Type I	230V
②	OM8XM1100	○	X-Y	Manual	Type I	100V
	OM8XM1120	○	X-Y	Manual	Type I	120V
	OM8XM1230	○	X-Y	Manual	Type I	230V
③	OM8UZ1100	○	Universal	ZOOM	Type I	100V
	OM8UZ1120	○	Universal	ZOOM	Type I	120V
	OM8UZ1230	○	Universal	ZOOM	Type I	230V
④	OM8UM2100	○	Universal	Manual	Type II	100V
	OM8UM2120	○	Universal	Manual	Type II	120V
	OM8UM2230	○	Universal	Manual	Type II	230V

Identification

Block diagrams



OM8-T02

100V : OM8XZ1100
120V : OM8XZ1120
230V : OM8XZ1230

100V : OM8XM1100
120V : OM8XM1120
230V : OM8XM1230

100V : OM8UZ1100
120V : OM8UZ1120
230V : OM8UZ1230

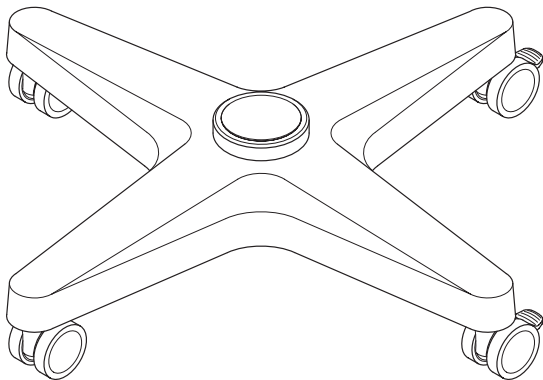
100V : OM8UM2100
120V : OM8UM2120
230V : OM8UM2230

Package Contents

- Package contents of this product are shown below.

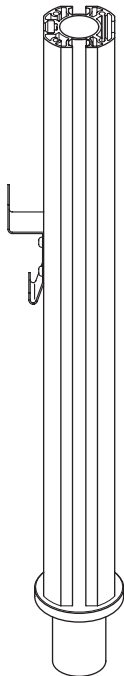
● Basic Components

Base



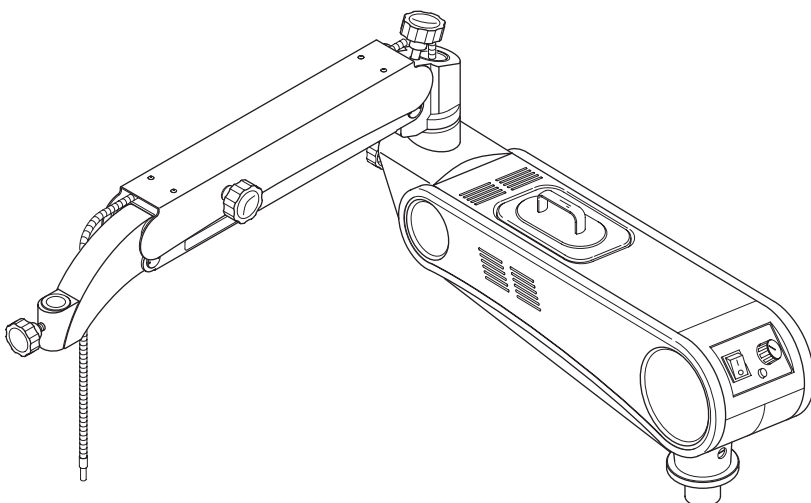
OM8-T03

Post



OM8-T04

Arm unit



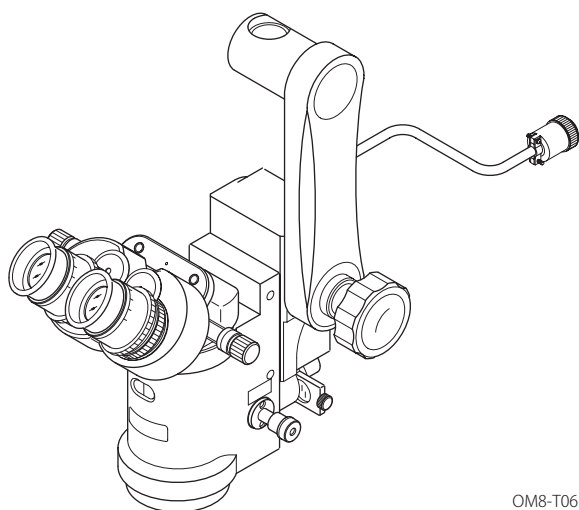
OM8-T05

Package Contents

● User's Choice

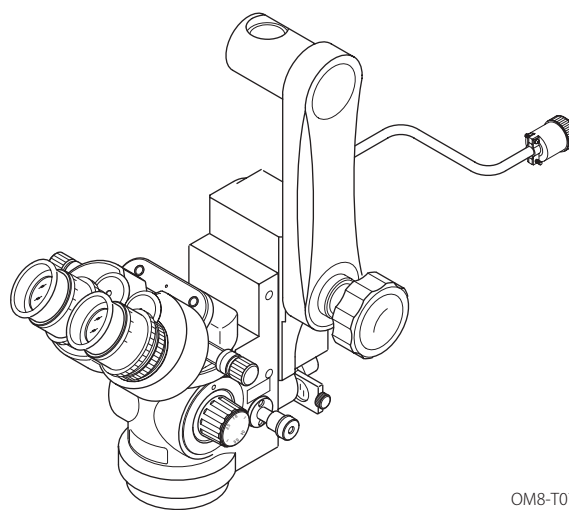
Microscope unit

Zoom microscope unit



OM8-T06

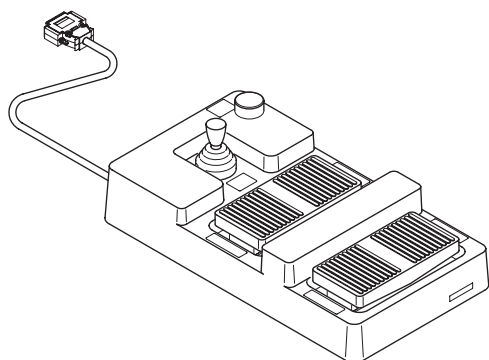
Manual microscope unit



OM8-T07

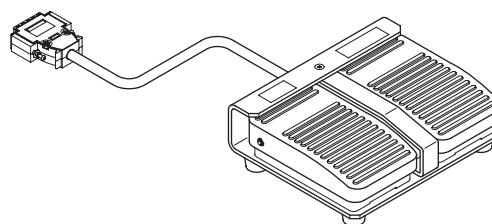
Foot controller unit (Foot switch unit)

Type I Foot controller unit (Type I Foot switch unit)



OM8-T08

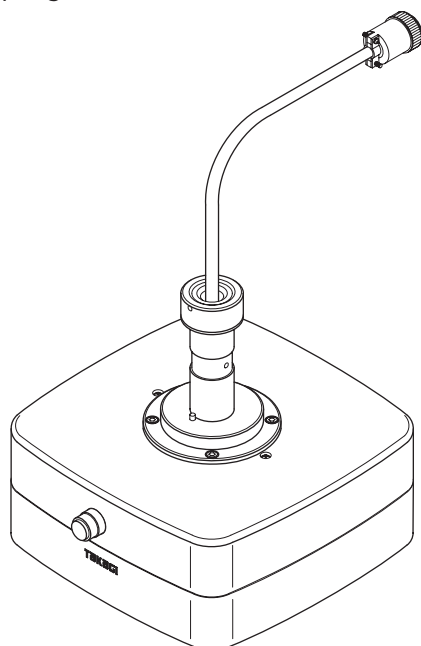
Type II Foot controller unit (Type II Foot switch unit)



OM8-T09

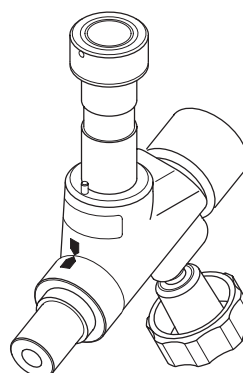
Coupling unit

X-Y Coupling unit



OM8-T10

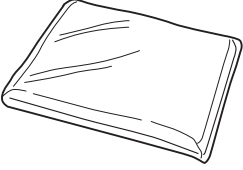

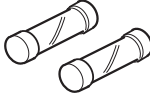


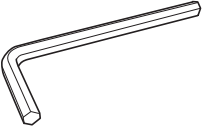
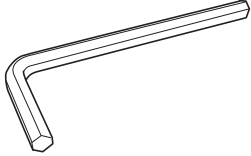
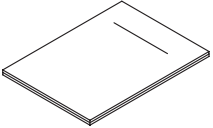
Universal coupling



OM8-T11

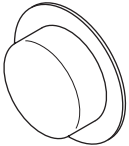



Package Contents

● Basic components

			
Dust Cover (1 ea)	Fuse (1 ea) 15A250V	Fuse (2 ea) T2.5L250V	Hexagonal Wrench Key (Side-to-side:1.5mm)
			
Hexagonal Wrench Key (Side-to-side:2.0mm)	Hexagonal Wrench Key (Side-to-side:4.0mm)	Hexagonal Wrench Key (Side-to-side:6.0mm)	Instruction Manual (1 copy)

OM8-T12

● User's choice components (Disinfectant caps)

			
Disinfectant caps (Z01019)	Disinfectant caps (Z01020)	Disinfectant caps (O09079)	Disinfectant caps (O04065-1)

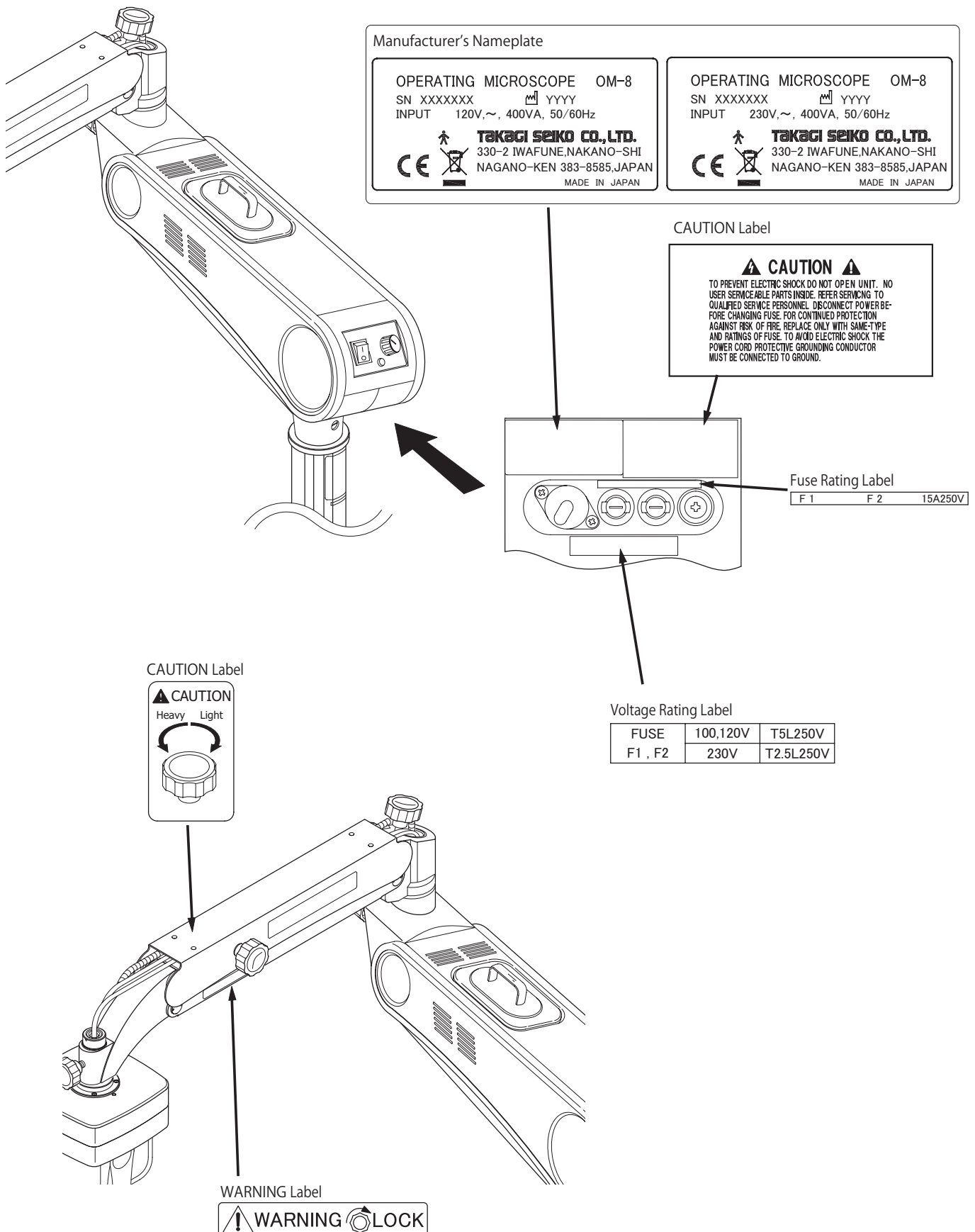
OM8-T13

No.	I D	Disinfectant caps (Z01019)	Disinfectant caps (Z01020)	Disinfectant caps (O09079)	Disinfectant caps (O04065-1)
①	OM8XZ1100	3 each	3 each	—	5 each
	OM8XZ1120				
	OM8XZ1230				
②	OM8XM1100	3 each	3 each	2 each	5 each
	OM8XM1120				
	OM8XM1230				
③	OM8UZ1100	3 each	4 each	—	4 each
	OM8UZ1120				
	OM8UZ1230				
④	OM8UM2100	3 each	4 each	2 each	4 each
	OM8UM2120				
	OM8UM2230				

Labels and Markings

• The labels affixed on this product are shown below.

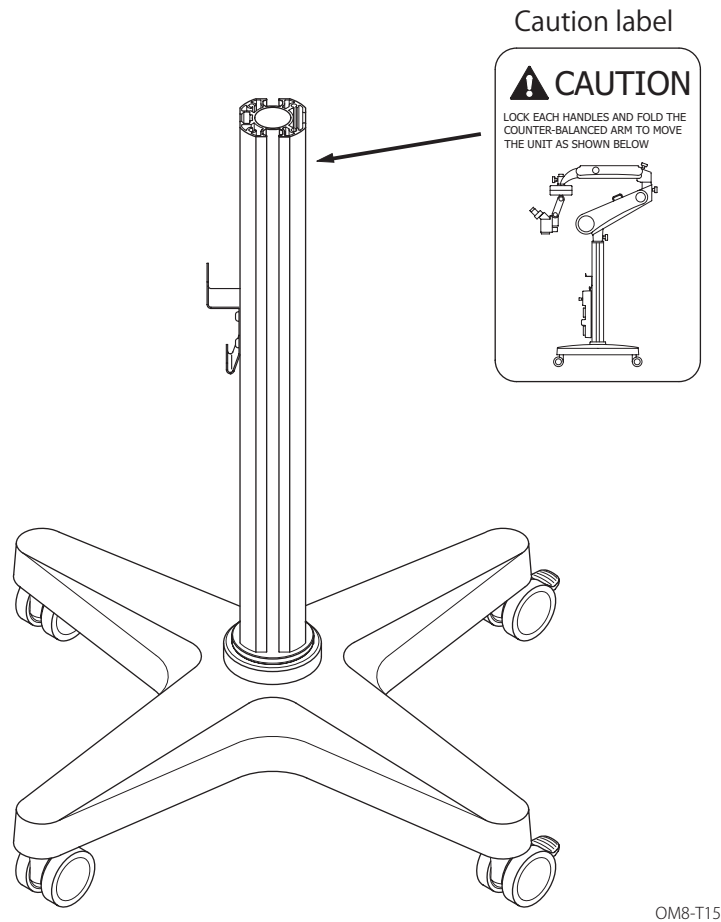
● Main unit



Labels and Markings

• The labels affixed on this product are shown below.

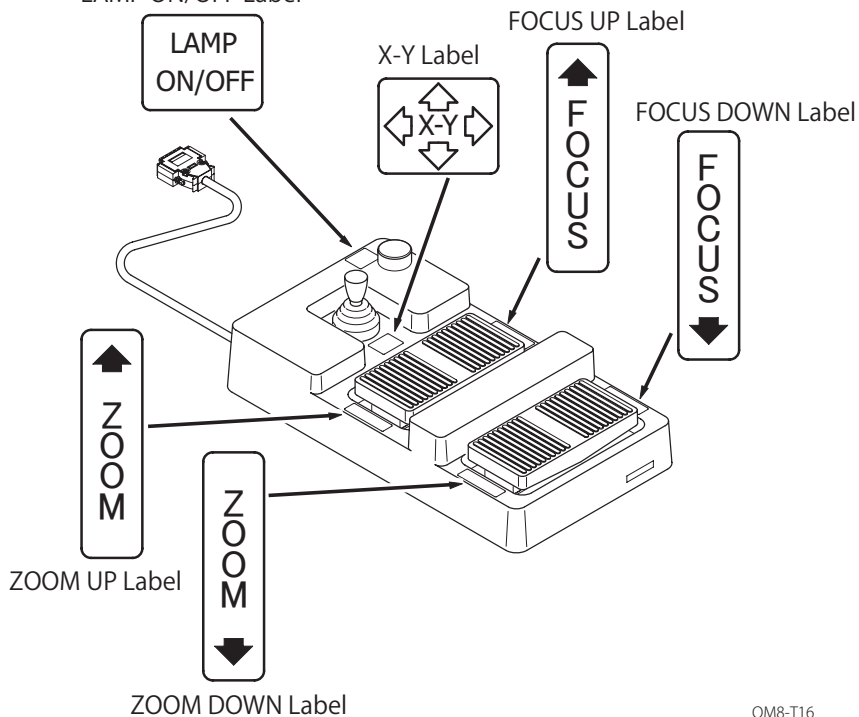
● Stand unit



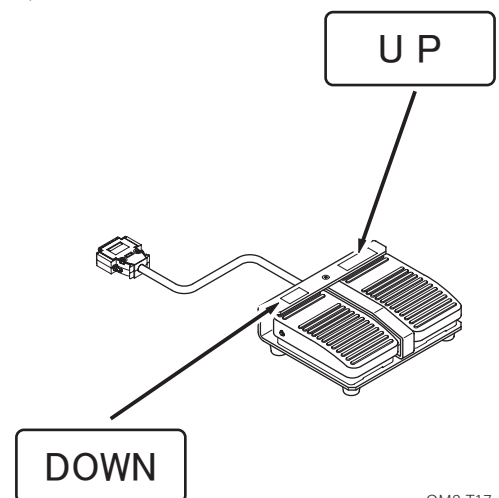
● Foot Controller

Type I Foot Controller

LAMP ON/OFF Label



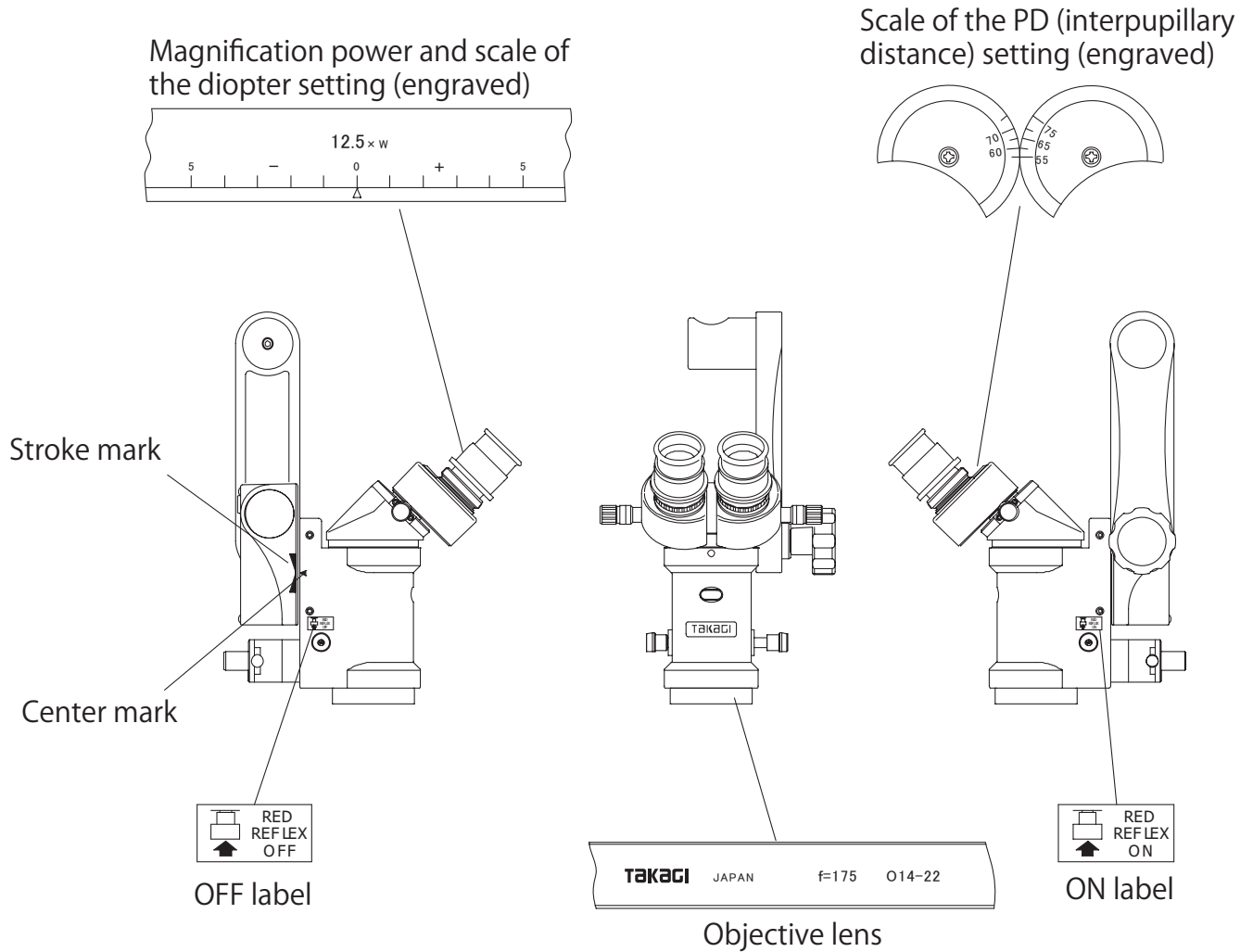
Type II Foot Controller



Labels and Markings

● Microscope unit

ID	OM8XZ1100	OM8UZ1100
	OM8XZ1120	OM8UZ1120
	OM8XZ1230	OM8UZ1230

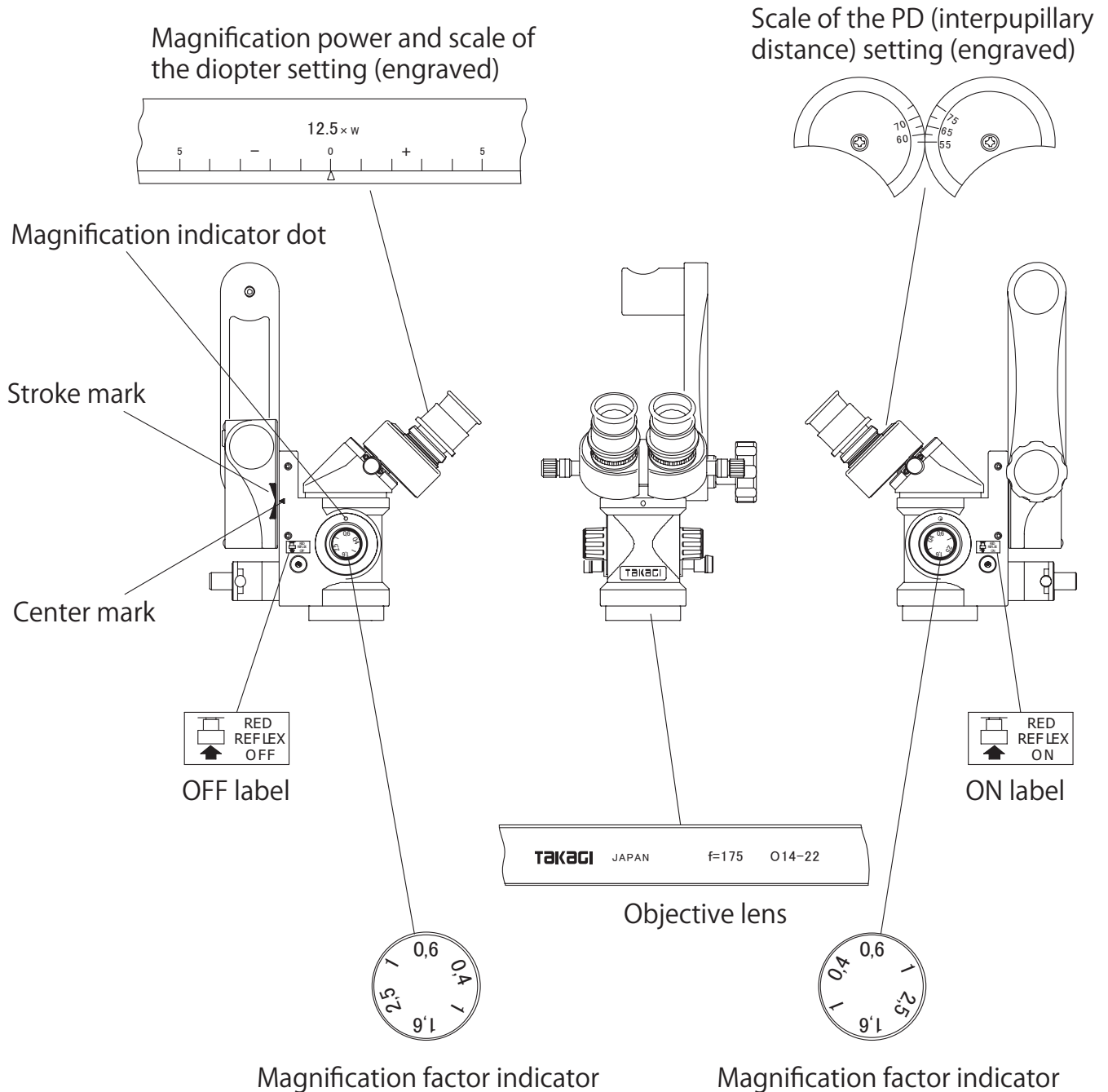


MT364-T18

Labels and Markings

● Microscope unit

ID	OM8XM1100	OM8UM1100
	OM8XM1120	OM8UM1120
	OM8XZM230	OM8UM1230

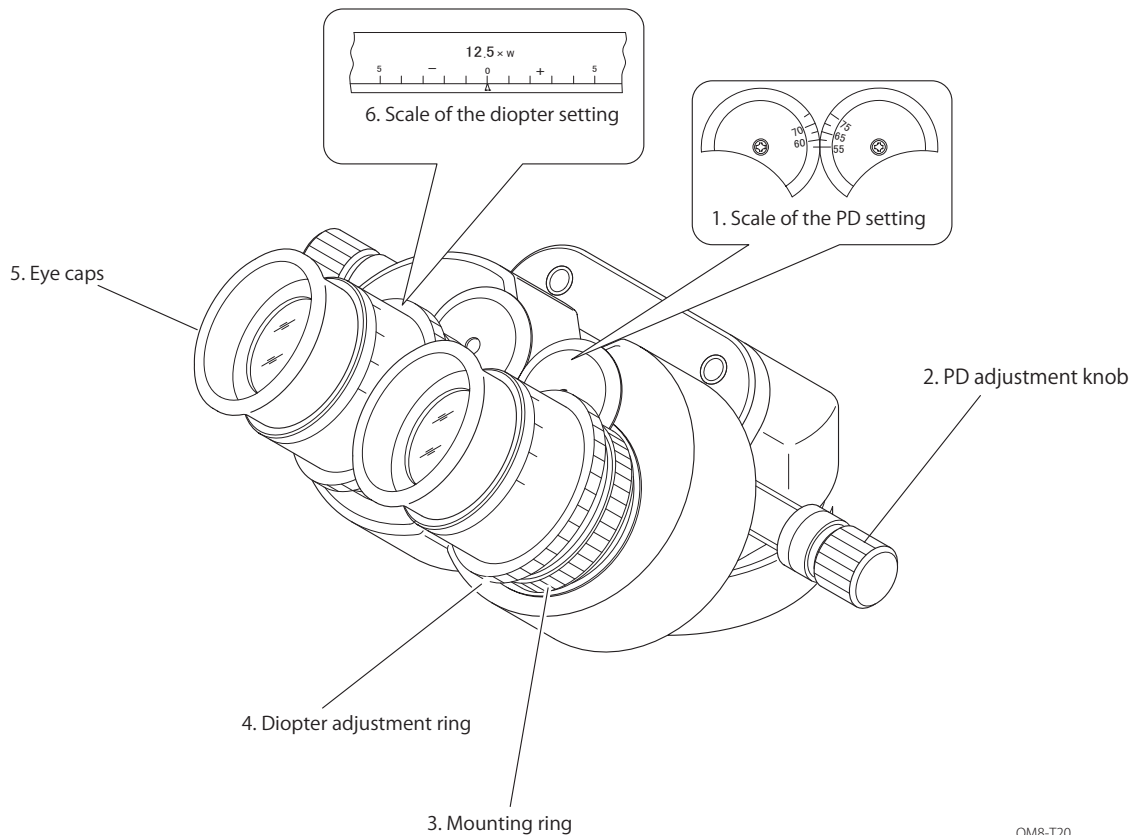


MT364-T19

Components and Their Functions

■ Main Unit Components (Eyepieces • Binocular Unit)

● The illustrations below show components of the main unit.



OM8-T20

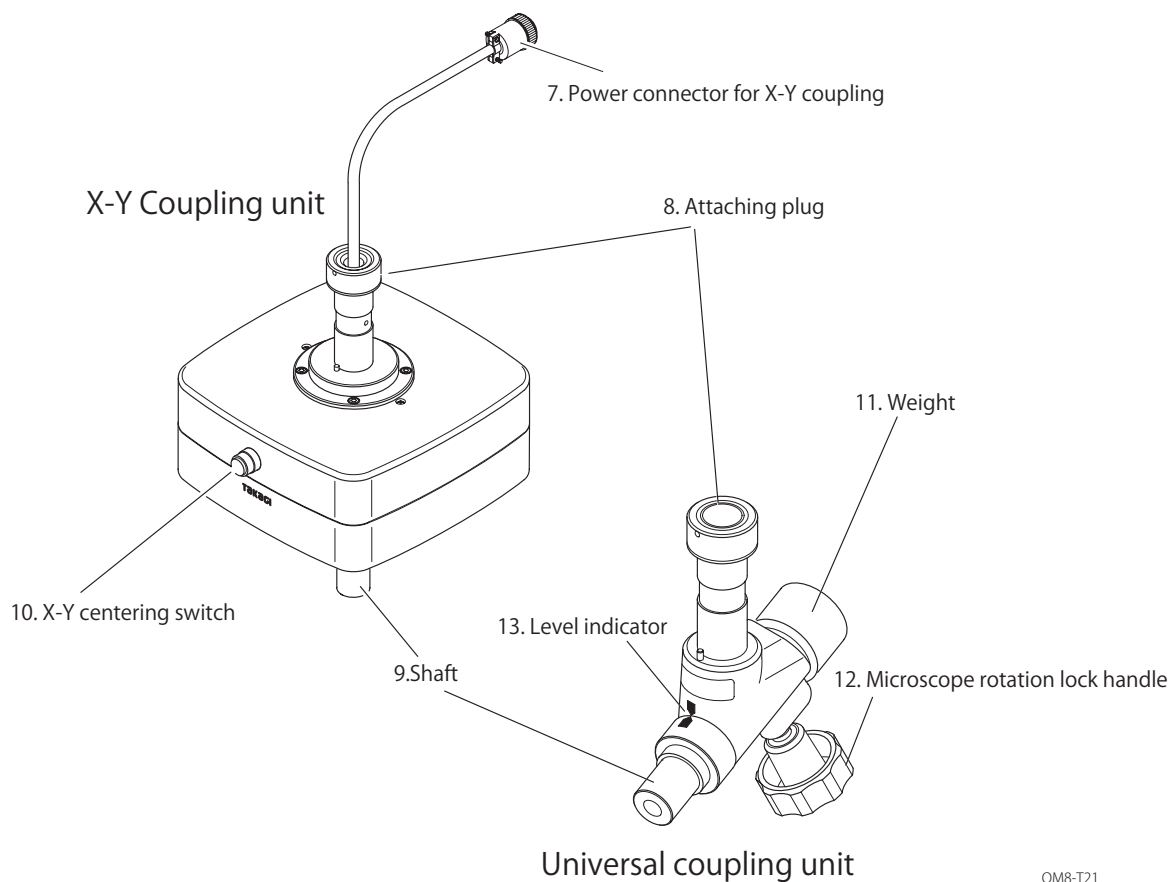
* The numbers in the table below correspond to the circled numbers in the previous section.

No.	Component Name	Function
1	Scale of the PD setting	Indicates the PD (interpupillary distance) setting
2	PD adjustment knob	Can adjust the PD within a range 55 to 75mm
3	Mounting ring	To be loosened to remove or replace the eyepiece.
4	Diopter adjustment ring	To be rotated to adjust the diopter.
5	Eye caps	Can be folded where required; e.g. where examiner wears spectacles.
6	Scale of the diopter setting	Can set the diopter within a range -5 to +5D

Components and Their Functions

■ Main Unit Components (Coupling Unit)

● The illustrations below show components of the main unit.



OM8-T21

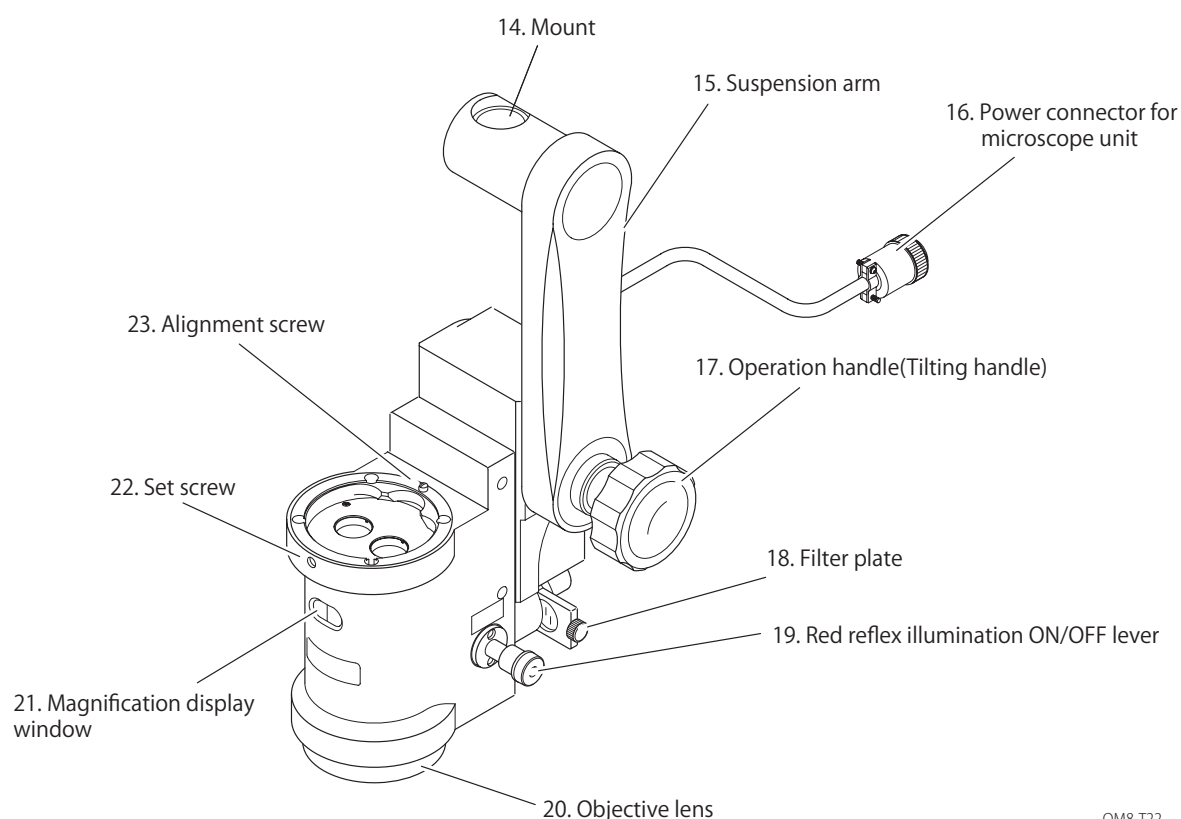
* The numbers in the table below correspond to the circled numbers in the previous section.

No.	Component Name	Function
7	Power connector for X-Y coupling	To supply power to the X-Y coupling
8	Attaching plug	To fix the coupling to the arm
9	Shaft	To fix the microscope unit
10	X-Y centering switch	To return the shaft to the center
11	Weight	To bring the unit into balance
12	Microscope rotation lock handle	To adjust and fix the rotation torque for the microscope
13	Level indicator	Shows the level state of the microscope unit

Components and Their Functions

■ Main Unit Components (Microscope unit (Zoom) • Top lens)

● The illustrations below show components of the main unit.



OM8-T22

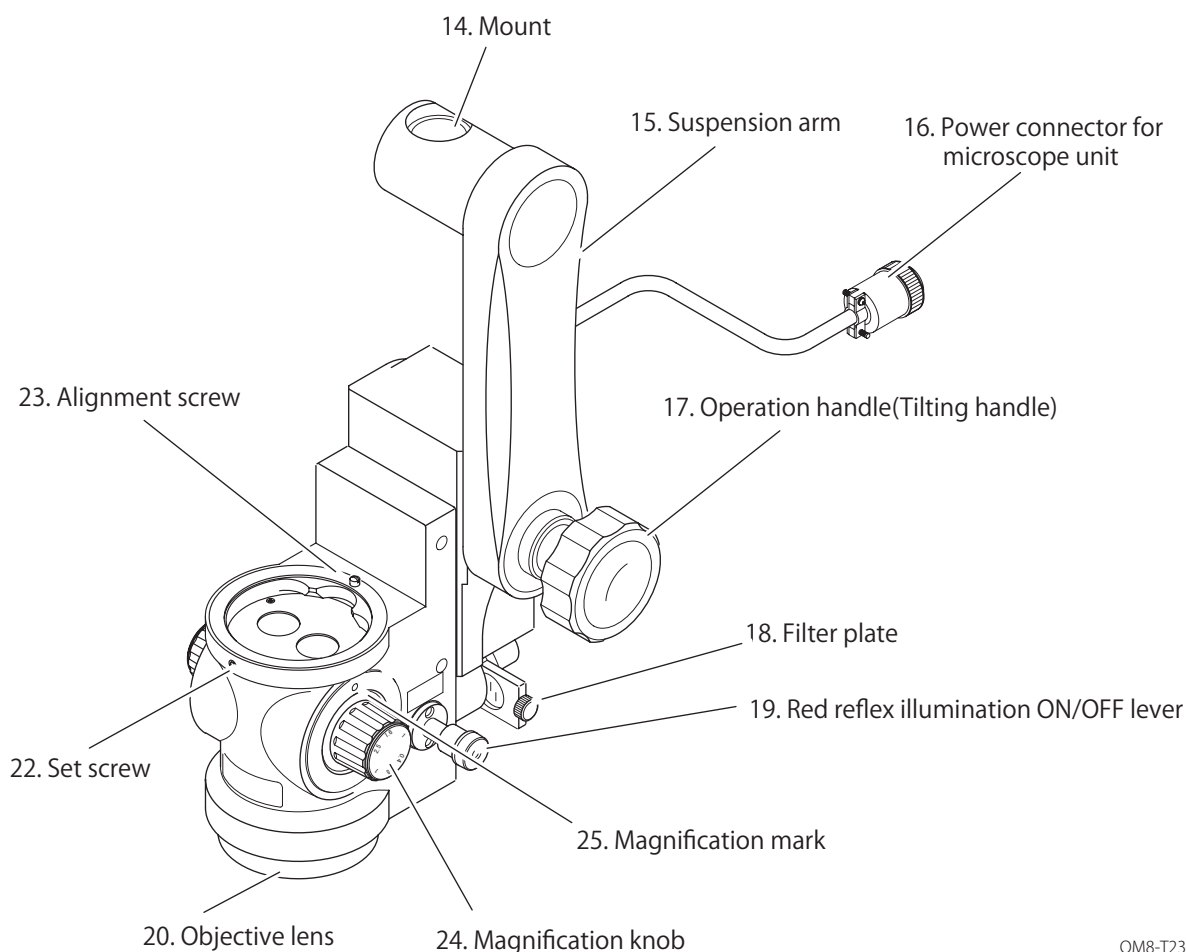
* The numbers in the table below correspond to the circled numbers in the previous section.

No.	Component Name	Function
14	Mount	To fix the shaft of the XY or universal coupling
15	Suspension arm	To support the microscope unit
16	Power connector for microscope unit	To supply power to the microscope unit for zooming in/out and focusing
17	Operation handle (Tilting handle)	To tilt forward and back the microscope unit by loosening it
18	Filter plate	To use the blue-cut, retinal protection, or only permanent UV and heat absorbing filter
19	Red reflex illumination ON/OFF lever	The red reflex illumination is applied when the lever is pushed The illumination is blocked when the lever is pulled out
20	Objective lens	Can be replaced by other objective lenses with each focal length
21	Magnification display window	Displays a magnification factor between 0.48 and 2.4
22	Set screw	To fix the binocular unit or optional accessories
23	Alignment screw	To align the binocular unit, or optional accessories to be mounted.

Components and Their Functions

■ Main Unit Components (Microscope unit (Manual) • Top lens)

● The illustrations below show components of the main unit.



OM8-T23

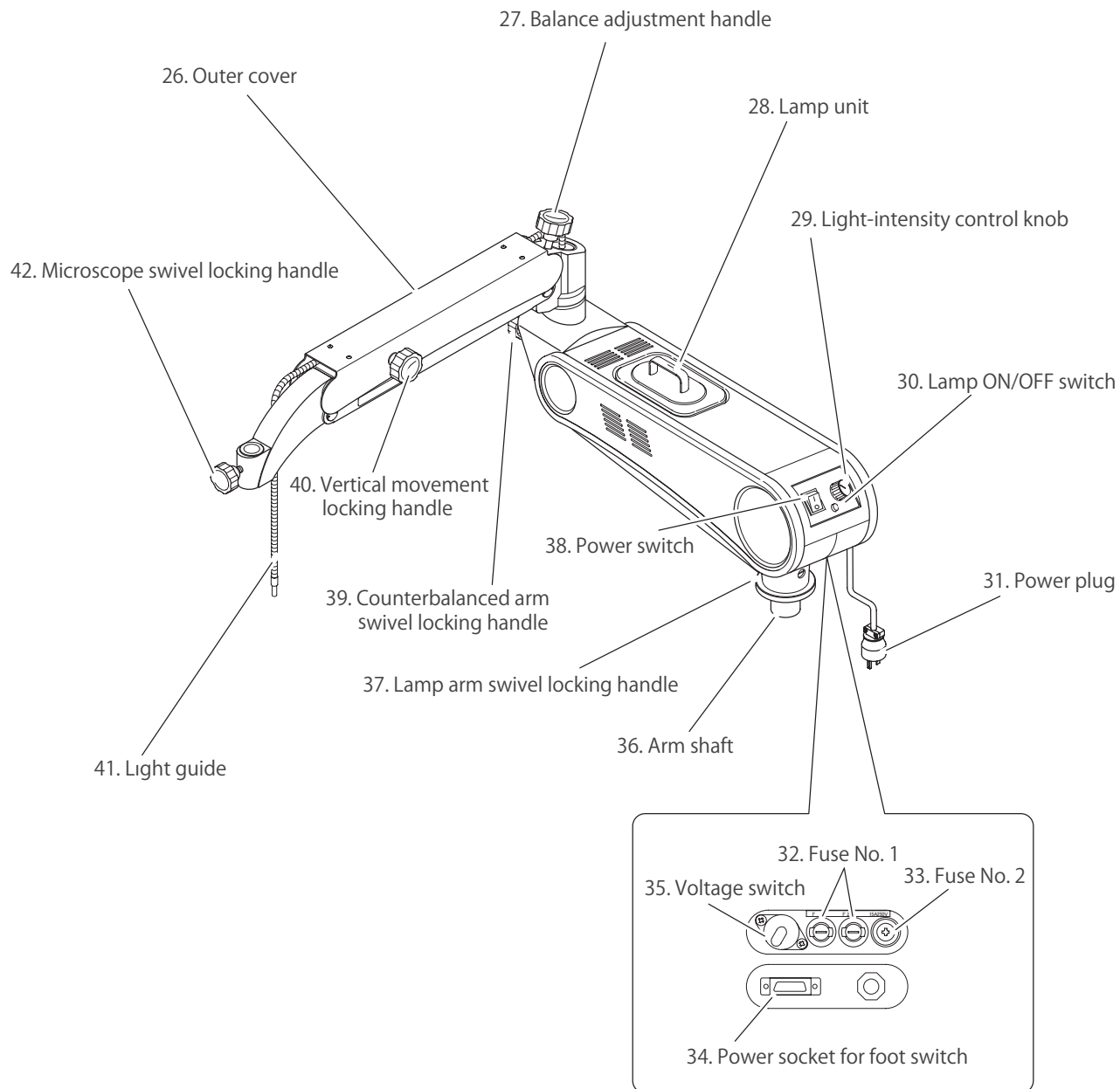
* The numbers in the table below correspond to the circled numbers in the previous section.

No.	Component Name	Function
14	Mount	To fix the shaft of the XY or universal coupling
15	Suspension arm	To support the microscope unit
16	Power connector for microscope unit	To supply power to the microscope unit for focusing
17	Operation handle(Tilting handle)	To tilt forward and back the microscope unit by loosening it
18	Filter plate	To use the blue-cut, retinal protection, or only permanent UV and heat absorbing filter
19	Red reflex illumination ON/OFF lever	The red reflex illumination is applied when the lever is pushed The illumination is blocked when the lever is pulled out
20	Objective lens	Can be replaced by other objective lenses with each focal length
22	Set screw	To fix the binocular unit, or optional accessories to be mounted
23	Alignment screw	To align the binocular unit, or optional accessories to be mounted
24	Magnification knob	Changes the microscope magnification in steps when rotated
25	Magnification mark	The value under the mark is the current variable power factor

Components and Their Functions

■ Main Unit Components (Arm · Lamp Arm Unit)

● The illustrations below show components of the main unit.



OM8-T24

Components and Their Functions

■ Functions of Main Unit Components (Arm • Lamp Arm Unit)

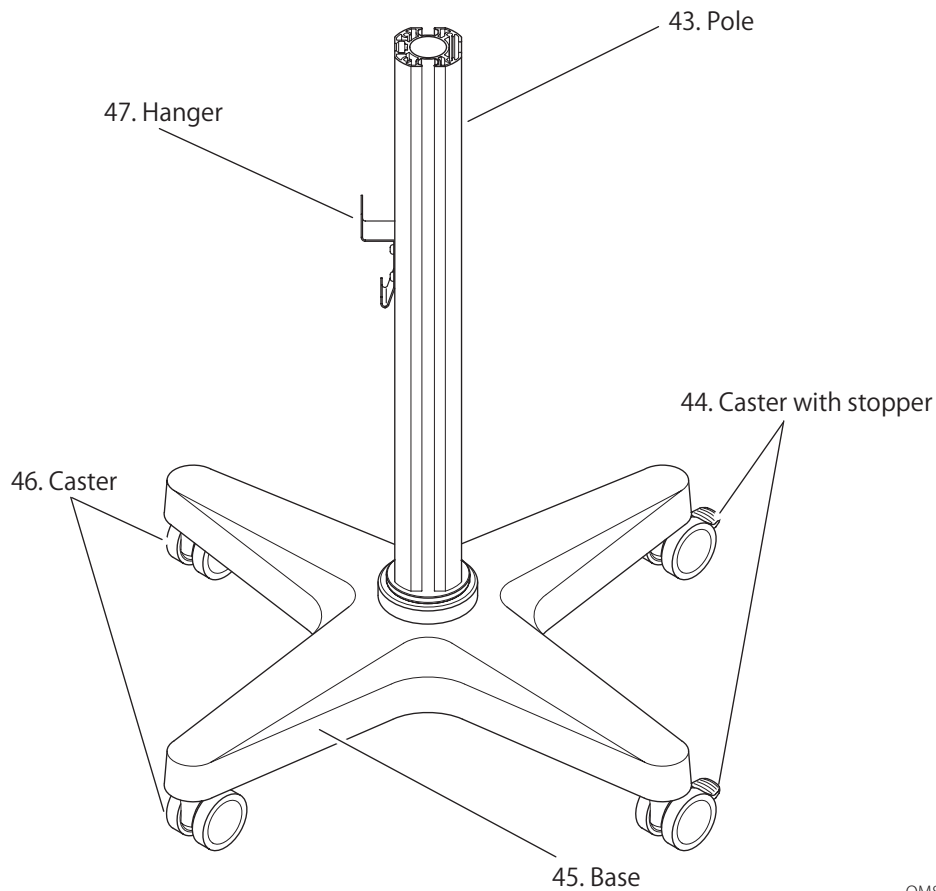
* The numbers in the table below correspond to the circled numbers in the previous section.

No.	Component Name	Function
26	Outer cover	Covers the light guide and other cables
27	Balance adjustment handle	Adjusts suspension of the counterbalanced arm
28	Lamp unit	Lamp is to be pulled out of the lamp socket upon replacement when the light bulb burned out
29	Light-intensity control knob	To control the brightness of the light being projected
30	Lamp ON/OFF switch	To turn on/off the light
31	Power plug	To connect to a wall socket
32	Fuse No. 1	Fuse for input voltage
33	Fuse No. 2	Fuse for the lamp
34	Power socket for foot switch	To connect with the power connector for the foot switch
35	Voltage switch	To select the input voltage
36	Arm shaft	Inserts in the stand (pole)
37	Lamp arm swivel locking handle	To lock the rotation of the lamp arm
38	Power switch	To switch on/off
39	Counterbalanced arm swivel locking handle	To lock the rotation of the counterbalanced arm
40	Vertical movement locking handle	To lock the up-and-down motion of the counterbalanced arm
41	Light guide	Inserts in the rear of the microscope for illumination
42	Microscope swivel locking handle	To lock the rotation of the coupling unit, microscope unit, and other accessories

Components and Their Functions

■ Main Unit Components (Stand unit)

● The illustrations below show components of the main unit.



※ * The numbers in the table below correspond to the circled numbers in the previous section.

No.	Component Name	Function
43	Pole	To insert and fix the arm in the upper part
44	Caster with stopper	Two casters with stoppers in the rear
45	Base	To insert and fix the pole in
46	Caster	Two casters without a stopper in the front
47	Hanger	Hangs the foot switch on the lower side, and the cable on the upper side

Installation

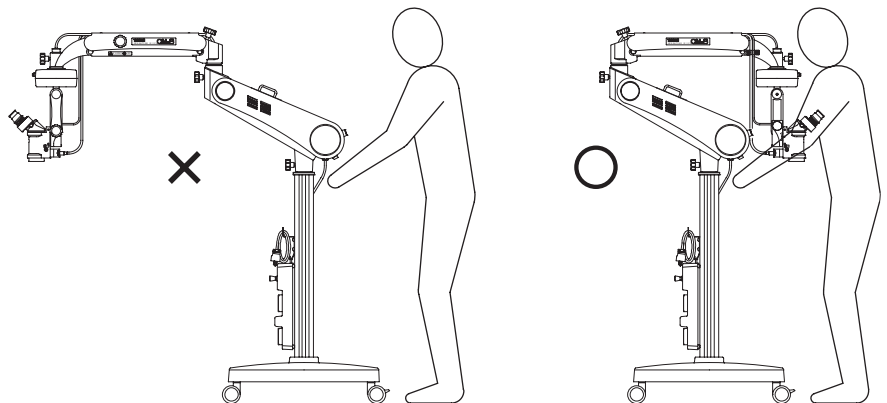
■ Installing the Main Unit

● Use this instrument under the following environmental conditions:

- Temperature: +10 to +35 degrees celsius
- Humidity: 30 to 75%



- When fully assembled, the OM-8 weights more than 80kg. Please assemble it at or near the site whereby it will be used.
- When assembling it in a nearby place, check in advance that there are no highly uneven areas in the floor between there and the site of use.
- At least two people are required for assembly. One person should not try to do it alone.
- When installing the coupling unit, do not turn the balance adjustment handle, as that could upset the adjustment of the counter-balanced arm and adversely affect the functioning of the unit.
- When installing the microscope unit, do not turn the balance adjustment handle, as that could upset the adjustment of the counter-balanced arm and adversely affect the functioning of the unit.
- When moving the OM-8, fold the arms as shown below, and then tighten all locking knobs and secure all the parts.
- Do not move the OM-8 while the arms are extended. It can cause its overturning.
- Do not move the OM-8 while the casters are locked. It can cause its overturning.
- Strong jolts can affect the functioning of the OM-8 and cause other problems, so be sure to be careful when moving it.



OM8-T25_2

● Install the instrument correctly by following the procedure below.

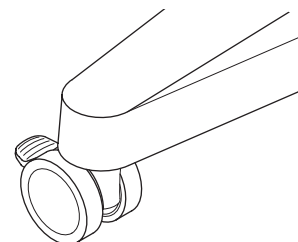
1. Remove the instrument from the packing box.

- Do not use a box cutter or other sharp tools to open the box.
- Check the contents of the box.

● Assembling the Stand Unit

1. Immobilize the base by lowering the two stoppers on the base's two stopper-attached casters.

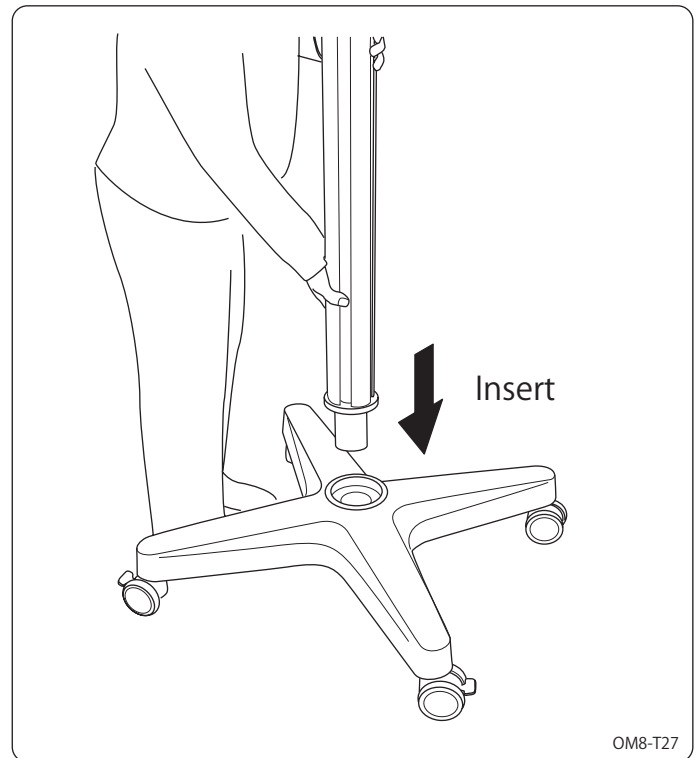
Lower to Lock



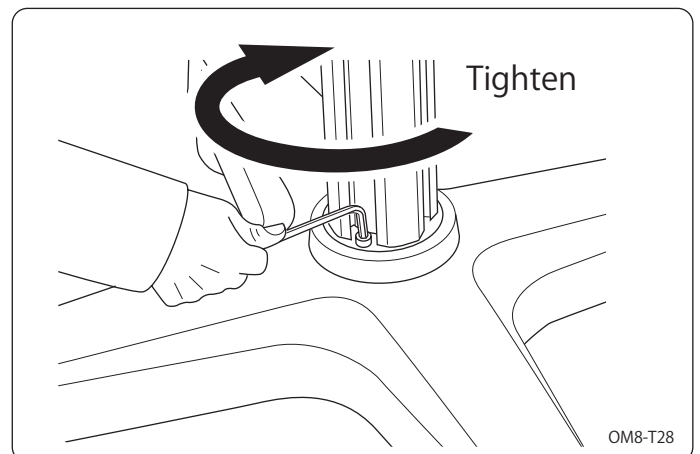
OM8-T26

Installation

2. Insert the bottom of the post into the base's boss.



3. Using the accessory 6 mm hexagonal wrench, tighten the fastening bolt, securing the post in the base.

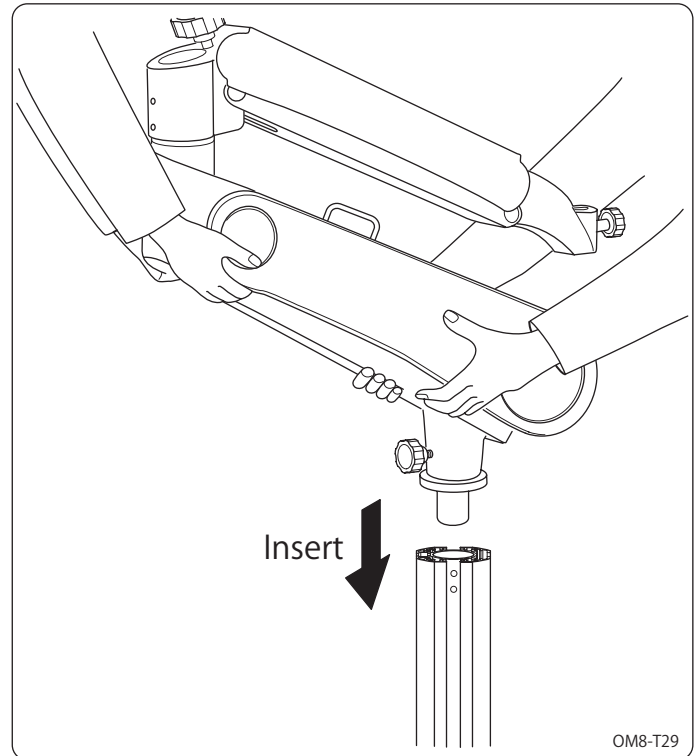


Installation

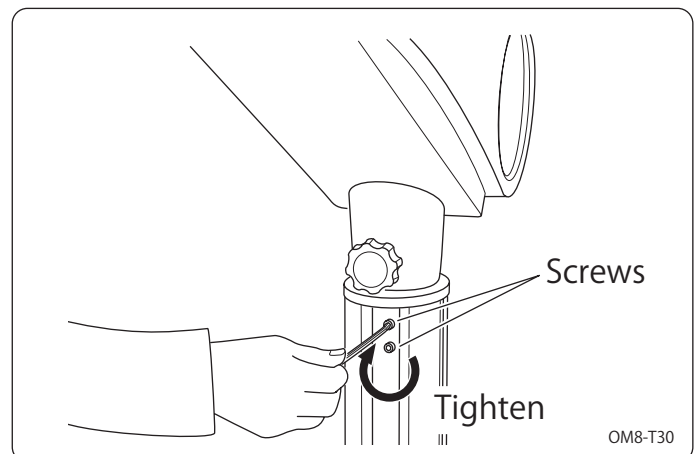
● Assembling the Arm Unit

1. Insert the arm shaft into the post.

*This step is better to be carried out by at least two people otherwise the arm unit will possibly be dropped.



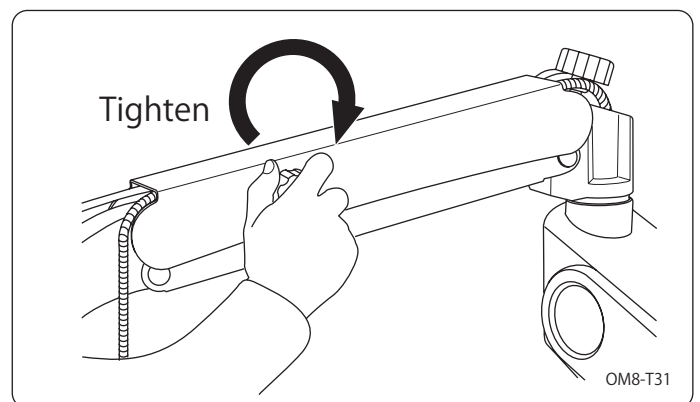
2. Using the accessory 4 mm hexagonal wrench, tighten the two screws in the post.



● Installing the Coupling Unit

*Use the XY coupling specified by our company.

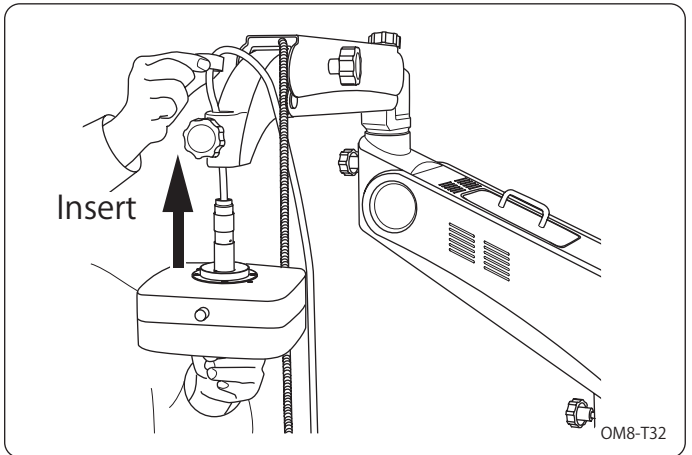
1. Turn the vertical movement locking handle clockwise, securing the counter-balanced arm in place.



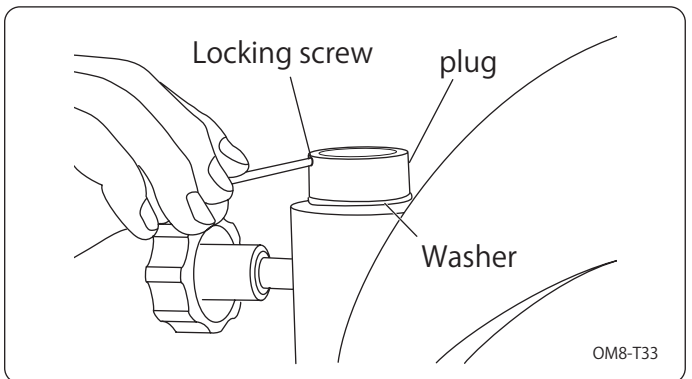
Installation

2. Put the X-Y coupling unit's (Universal coupling unit's) attaching shaft through the counter-balanced arm's boss, fit the washer and plug onto the shaft.

- Place the plug so that the two locking screws are on its upper side.



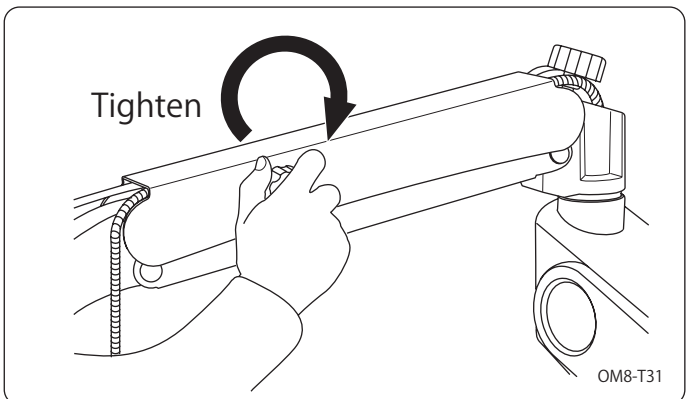
3. Tighten the two locking screws with accessory 1.5 mm hexagonal wrench, securing the X-Y coupling unit in place.



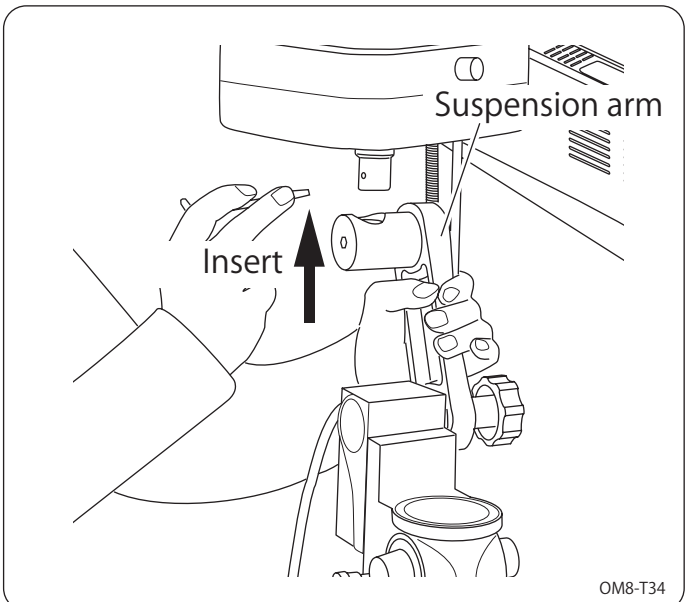
● Installing the Microscope Unit

*Use the microscope unit specified by our company.

1. Turn the vertical movement locking handle clockwise, securing the counter-balanced arm in place.

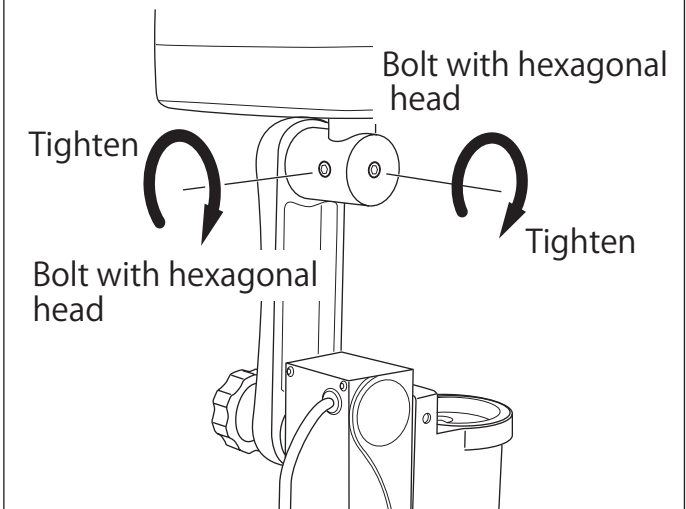


2. Insert the shaft of the XY coupling unit (or the Universal coupling unit) into the suspension arm's boss firmly.



Installation

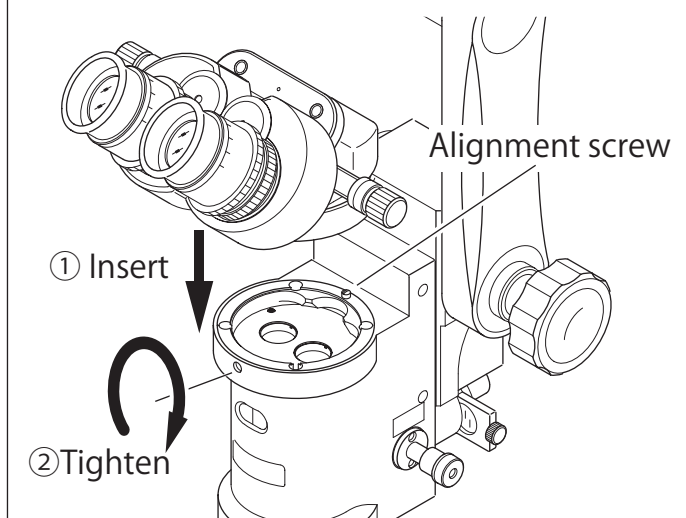
3. Align the direction of the suspension arm so that the binocular microscope unit and X-Y centering switch of the X-Y coupling unit (or the level indicator of the Universal coupling unit) face the same direction. Then tighten the two hexagonal bolts with the 4 mm hexagonal wrench, securing the suspension arm.



OM8-T35

● Installing the Binocular

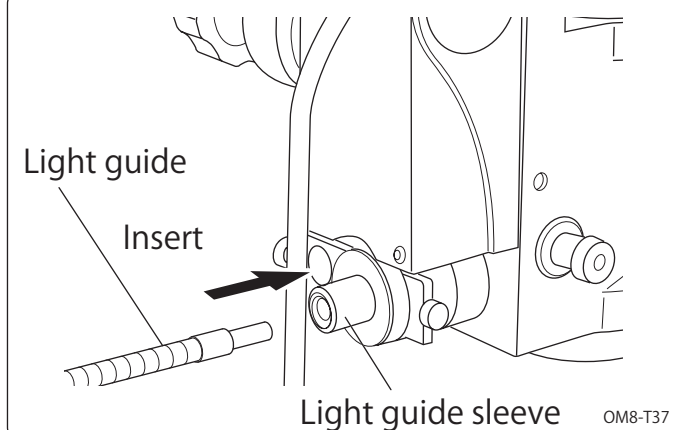
1. Align the binocular unit with the alignment screw on the microscope unit's attachment mount and insert it. Then secure it by tightening the set screw.



OM8-T36

● Attaching the Light Guide

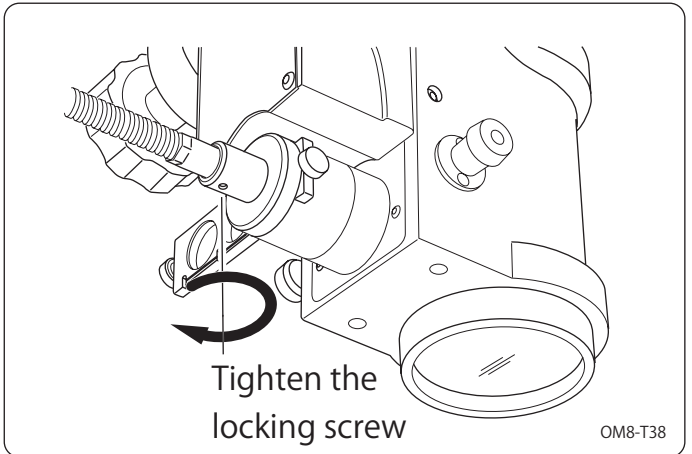
1. Insert the light guide in the light guide sleeve (at the back of the microscope unit).



OM8-T37

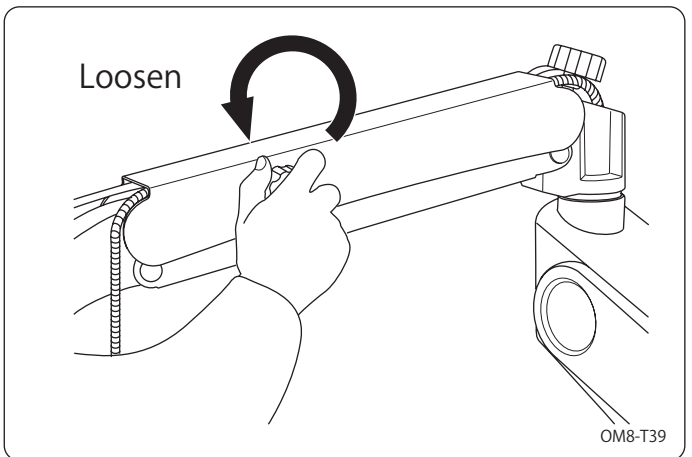
Installation

2. Tighten the locking screw with 1.5 mm hexagonal wrench, secure the light guide in place.

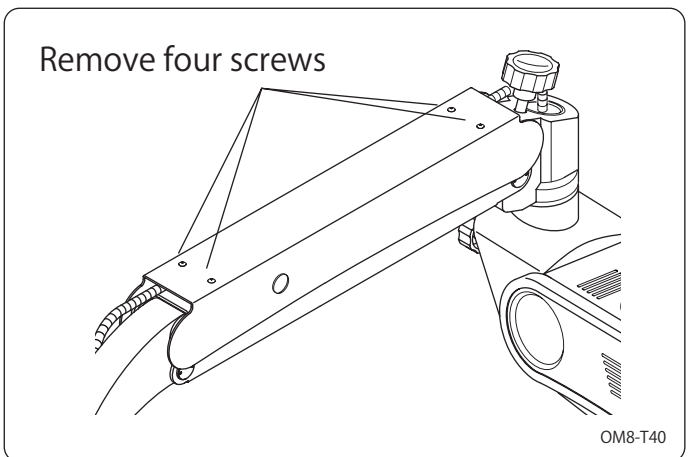


● Attaching the Cables

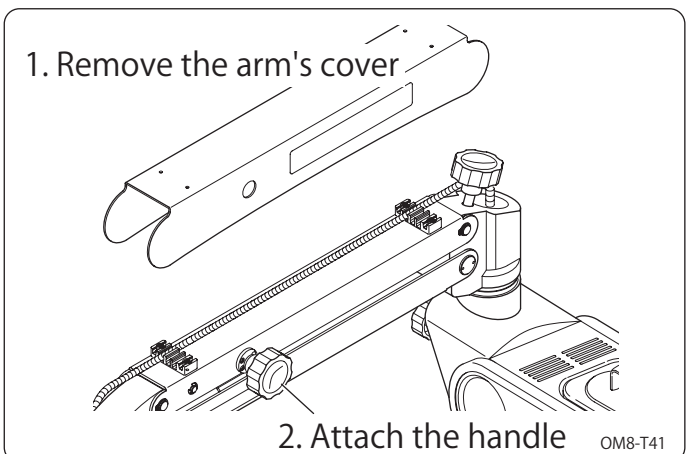
- Removing the counter-balanced arm's cover
1. Turn the vertical movement lock handle counterclockwise, remove the handle.



2. Remove the four screws on the arm's cover with a screwdriver.



3. Remove the arm's cover, and attach the vertical movement locking handle again to the arm, then turn it clockwise until it stops, securing the balance arm in place.

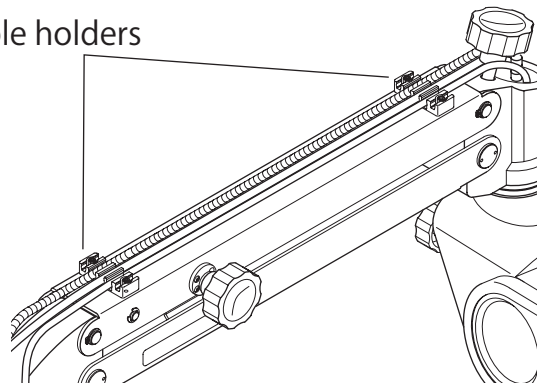


Installation

- Fixing the cables

1. Put the cables in the cable holders on the balanced arm.

Cable holders

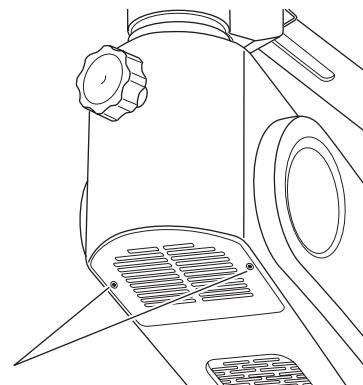


OM8-T42

- Connecting the cables

1. Remove the bottom cover by removing the two screws.

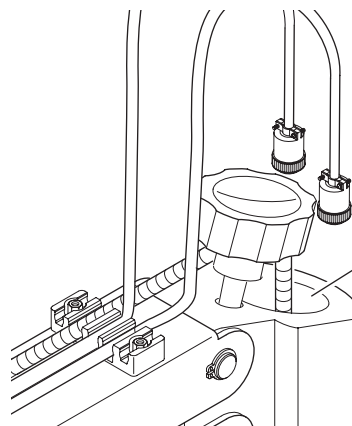
Remove two screws



OM8-T43

2. Put the cables through the counter-balanced arm's boss.

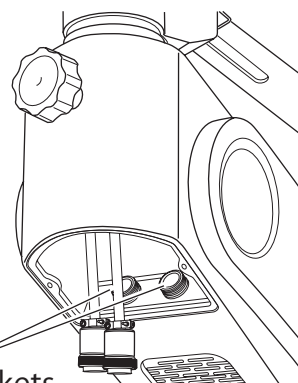
Pass through



OM8-T44

3. Connect the cables to the cable sockets inside the lamp arm.

Connect to the sockets



OM8-T45

Installation

- Connect the cable from the microscope unit to the left of the sockets.
- Connect the cable from the XY coupling unit to the right of the sockets.

4. Attach the cover to its original location.

From the
microscope unit

From the XY
coupling unit

OM8-T46

● Connecting the Foot Switch Unit

*Use the foot controller unit specified by our company.

*Connect the foot controller to the arm unit where patients are absent.

1. Connect the foot switch connector to the foot switch power socket of the arm unit.
2. Tighten the attaching screws.

Tighten the screws

OM8-T47

■ Changing the Pedal Layout of the Type I Foot Controller

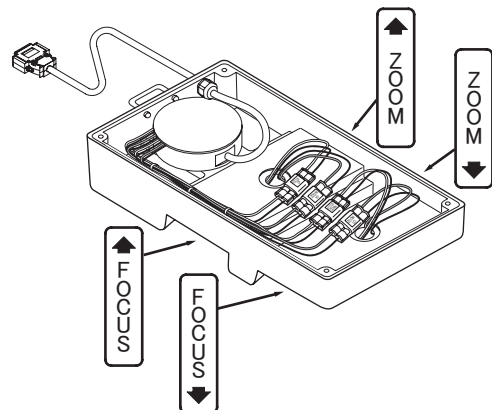
- The pedal layout of the Type I foot controller can be changed.

1. Remove four screws in the back of the foot controller, then remove the back cover.

Remove four screws

OM8-T47-1

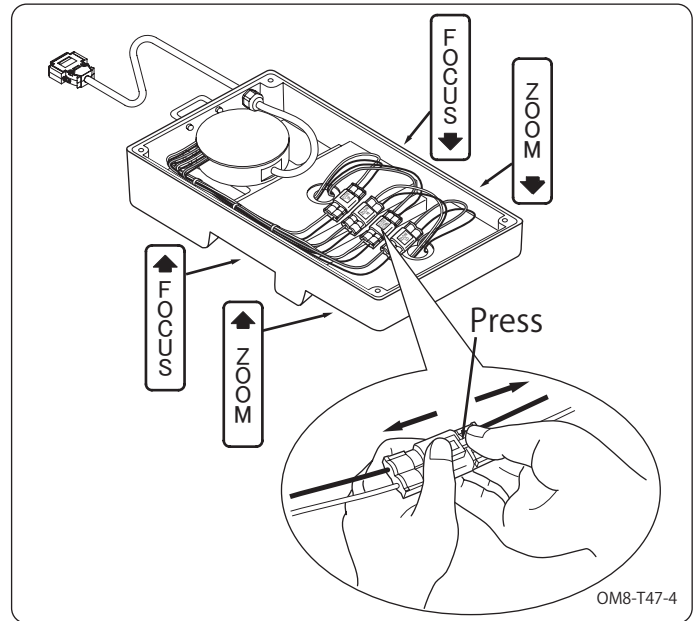
*Original pedal layout and connections of each connector are as the right illustrate.



OM8-T47-2

Installation

2. Take off connectors from the pedal to be changed. The connectors can be taken off by pressing and taking off the hook on the back.
3. Connect the connectors from the pedal to required plugs for zoom up/down and focus up/down.
 - * Be sure to connect the connectors tightly. Imperfect connection may not waterproof the connectors.
4. Stick the spare labels on positions of the layout.
5. Attach the back cover by tightening the four screws in the back.
 - * Make sure that the new layout works properly.



■ Connecting the Power Cable



WARNING

- Be sure to connect to the earth securely.
- Do not touch the power plug with wet hands.

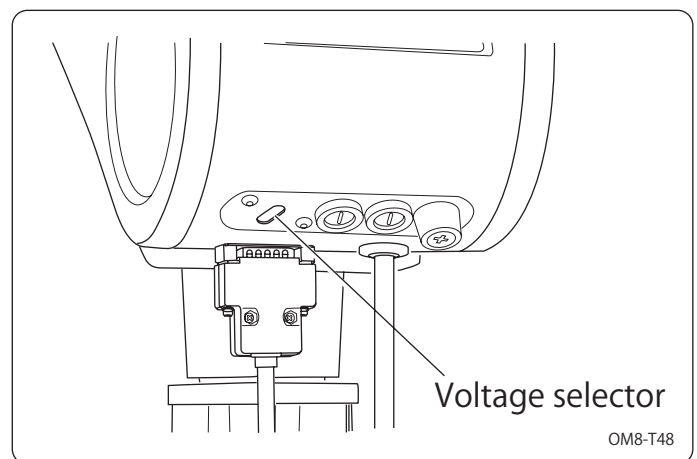


CAUTION

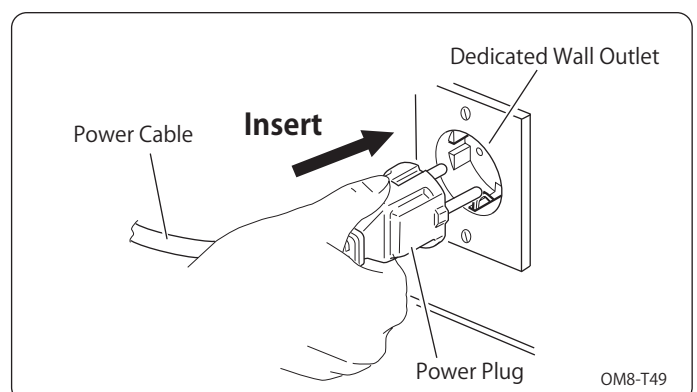
- Insert the power cable plug securely, so that it won't become loose.
- Use the socket exclusively for the power cable, do not put other loads on the socket.

- Connect the instrument directly to a suitable wall outlet.

1. Set the voltage selector at the back of the lamp arm to the working voltage.



2. Insert the power plug in a dedicated wall outlet.
 - * If the plug should become loose, imperfect contact or electric shock could result.
 - * When disconnecting the power cable from the socket, pull it out by the plug. Do not pull it out by the cord.



Preparations for Operation

- After making all the attachments and connecting the cables as described in " Installation ", carry out the following procedures.

■ Adjusting the Balance

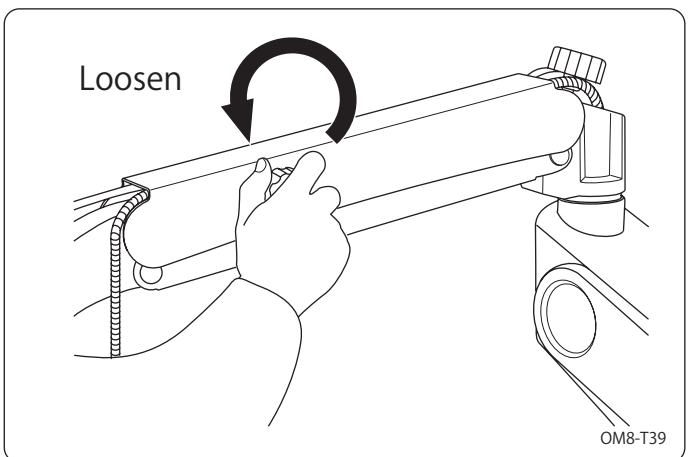


- Be careful not to catch your finger in the arm when moving the arm up and down.
- Be sure to adjust the counterbalanced arm's balance.
Without adequate balance adjustment, sudden descent or ascent of the counterbalanced arm may cause accidents.
- When options are attached or removed, the resulting change in weight will necessitate adjusting the counter-balanced arm's balance by means of the balance adjustment handle.
Without adequate balance readjustment, sudden descent or ascent of the counterbalanced arm may cause accidents.
- In case that the counterbalanced arm's balance cannot be adjusted properly as the arm drops by itself, discontinue the use of the OM-8 immediately.

- When options are attached or removed, the resulting change in weight will necessitate adjusting the counter-balanced arm's balance by means of the balance adjustment handle.
- To adjust the counter-balanced arm's balance, release the vertical movement lock handle, then adjust the balance adjustment handle until the arm rises naturally and slowly.

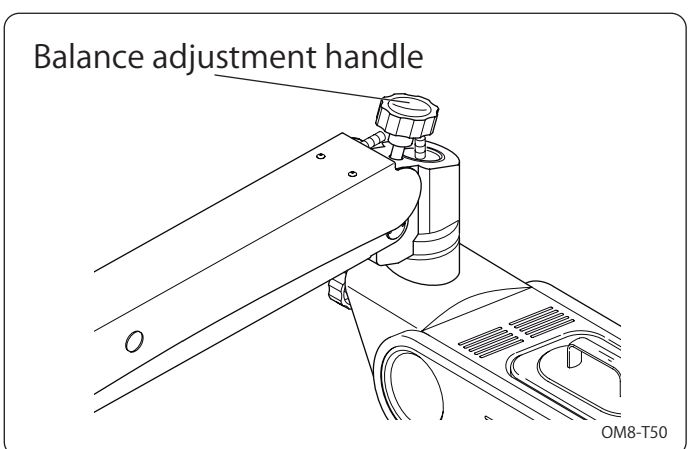
1. Loosen the vertical movement locking handle by turning it counterclockwise.

- When options are attached, the resulting weight gain will lower the arm.
- When options are removed, the resulting weight loss will cause the arm to rise.



2. To adjust the counter-balanced arm, turn the balance adjustment handle in the appropriate direction as described on the right until the arm rises naturally and slowly

- When the counter-balanced arm has descended, turn the balance adjustment handle counterclockwise.
- When the counter-balanced arm has risen, turn the balance adjustment handle clockwise.



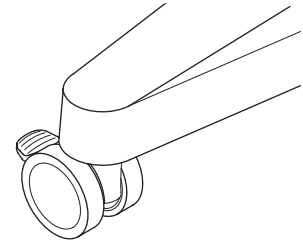
Preparations for Operation

■ Immobilizing the Stand / Arm

- To prevent shaking during operation, immobilize the stand and arm prior to operation.
- To immobilize the stand and arm, turn the various locking handles in the clockwise direction until they stop.

1. Immobilize the base by lowering the stoppers on the base's two stopper-attached casters.

Lower to Lock



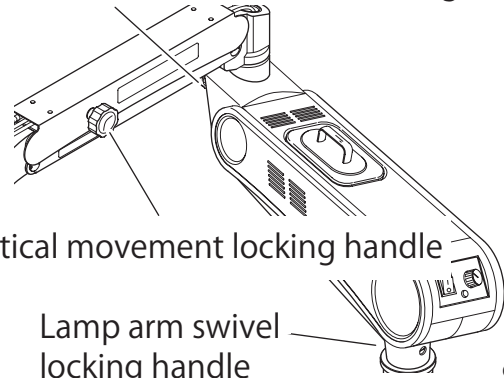
OM8-T26

2. If necessary, turn the counter-balance arm's and the lamp arm swivel locking handles clockwise until they stop, locking the arms.

Counter-balanced arm swivel locking handle

Vertical movement locking handle

Lamp arm swivel locking handle



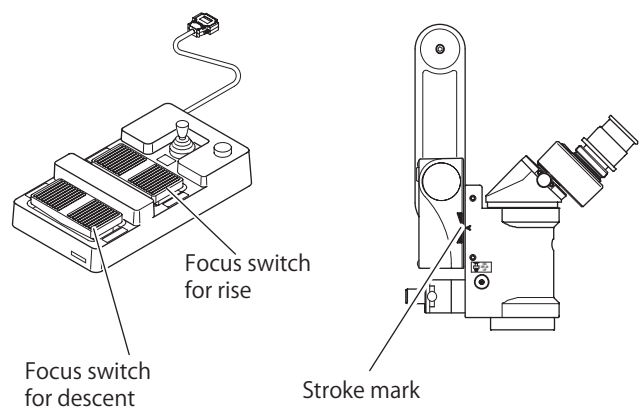
OM8-T51

■ Centering

- Prior to operation, set the microscope unit at the center of its vertical, lateral and longitudinal strokes (its range of movement) according to the following instructions.

• In case of using Type I Foot switch unit.

1. Step on the front or the back of the foot switch unit's focus switch to rise or descend the microscope so that the center mark on the microscope comes to the center of the stroke mark.

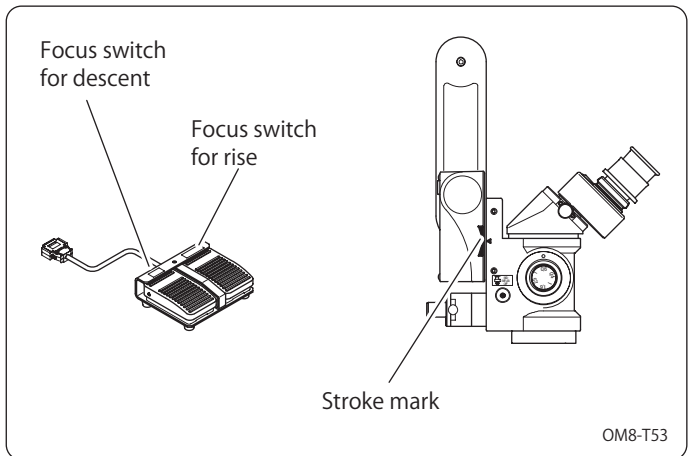


OM8-T52

Preparations for Operation

- In case of using Type II Foot switch unit

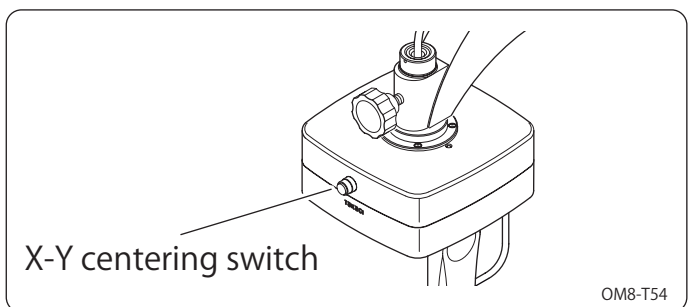
1. Step on the right or the left of the foot switch to rise or descent the microscope so that the center mark on the microscope comes to the center of the stroke mark.



- In case of using X-Y coupling unit

1. Press the X-Y centering switch on the X-Y coupling unit .

- The X-Y coupling unit will return to its original position (the center of its range of movement).



■ Adjusting Diopters

- Prior to operation, adjust the diopters of the microscope's eyepieces to your eyesight.
- If you wear glasses, fold back the eyecaps of the eyepieces and then adjust the diopters.
- For adjusting the diopters, have clean white paper ready.

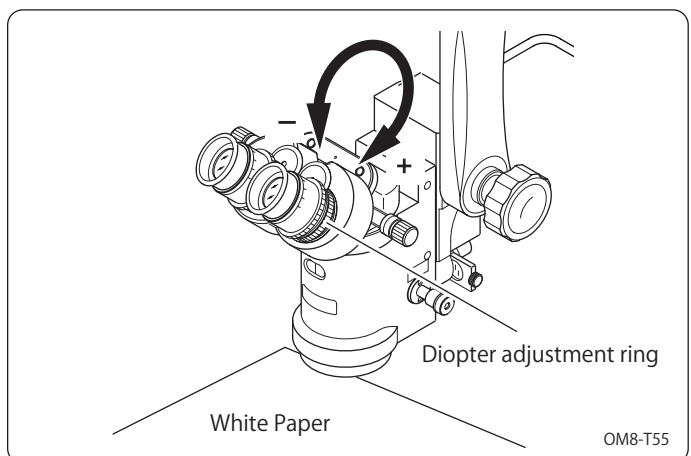
1. Press the [I] side of the power switch, turning on the power. Turn the microscope light intensity control knob clockwise, turning on the light.

2. Place white paper below the objective lens, turn the diopter adjustment ring of then eyepieces to be adjusted in the counterclockwise direction (+ side) until it stops, and look into the eyepieces.

- The contours of the visual field look unclear.

3. Turn the diopter adjustment ring back in the clockwise direction (- side) until the contours of the visual field become clear.

4. Repeat Steps 2 to 3 for the other eye.

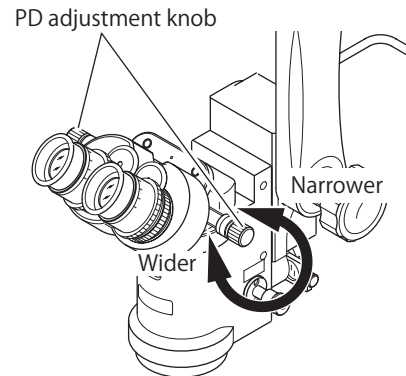


Preparations for Operation

■ Adjusting the PD

- Adjust the microscope's ocular lenses to your PD (interpupillary distance).

1. When the PD adjustment knob is turned towards you (turned so that the top of the knob moves toward you), the PD gets narrower, and when knob is turned away from you, the PD gets wider.



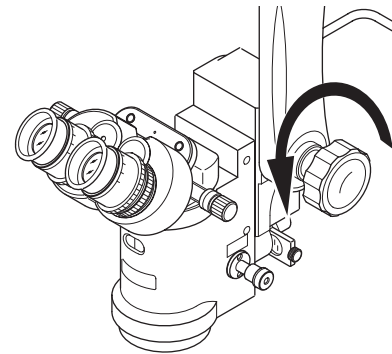
OM8-T56

■ Adjusting the Tilt of the Microscope

- Adjust the microscope to your build and working conditions, putting it at an angle that is comfortable for you to use.

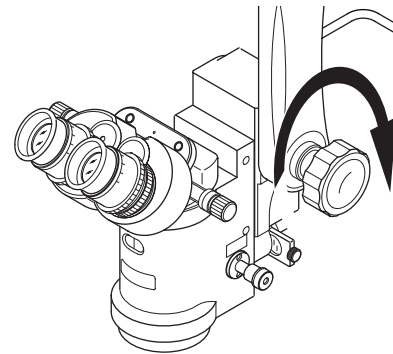
1. Supporting the microscope with your left hand, with your right hand turn the operating handle towards you (turn it so that the top of the handle moves towards you), releasing the locking of the microscope.

2. Looking into the microscope's eyepieces, tilt the microscope to a position whereby you can look into it comfortably.



OM8-T57

3. Turn the operating handle away from you (so that the top of the handle moves away from you), fixing the tilt of the microscope.



OM8-T58

Operation

- After completion the "Preparations for Operation", operate the OM-8 as follows.

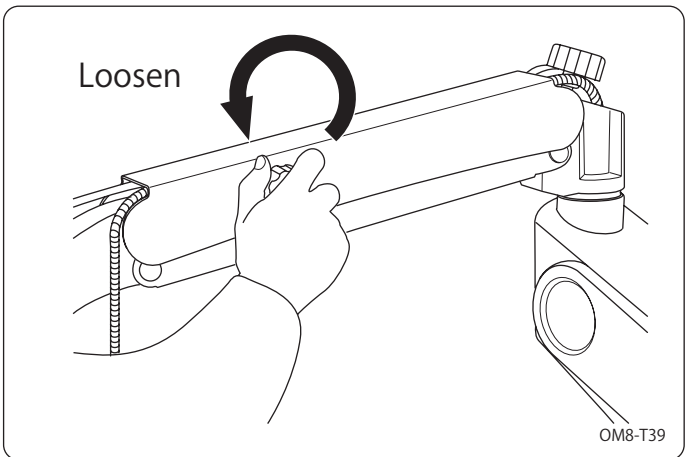
■ Zoom Microscope Unit



- Be sure to tighten the vertical movement locking handle when using the OM-8. Without locking it, sudden descent or ascent of the counterbalanced arm can cause accidents.

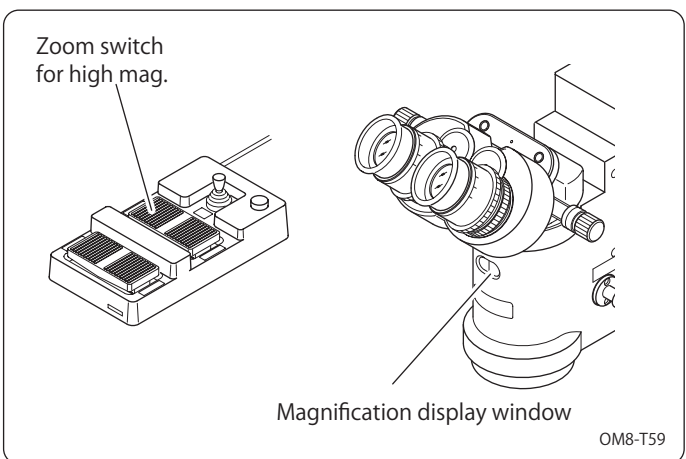
1. Turn the vertical movement locking handle on the side of the counter-balanced arm counterclockwise, loosening the counterbalanced arm. Move the microscope near to the location on the patient where the surgery or treatment will take place.

2. Looking into the microscope, use the handle to slowly raise the counter-balanced arm until the target location enters your field of vision. Then tighten the vertical movement locking handle, locking the arm in place.

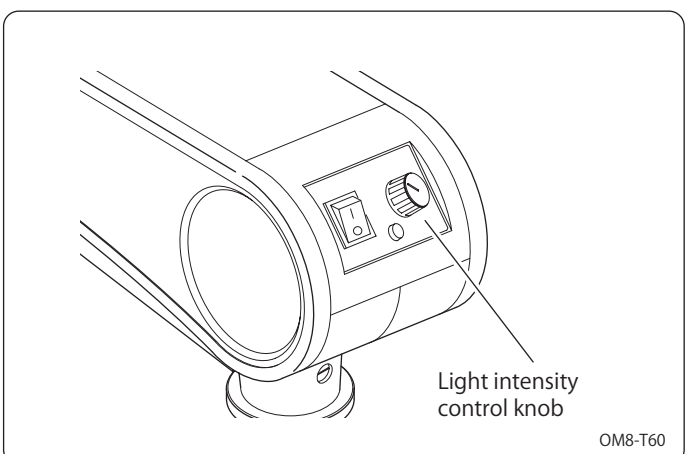


3. Step on the front side of the foot switch unit's zoom switch and maximize the magnification.

- The magnification is displayed in the magnification display window.

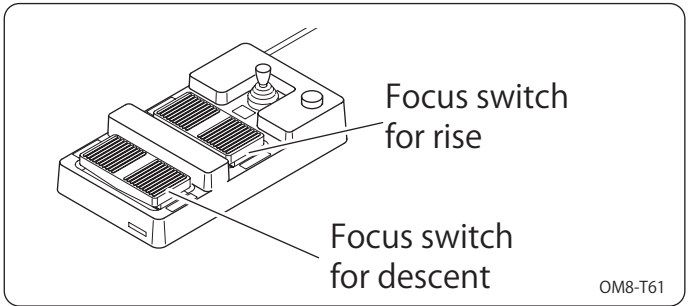


4. Turn the microscope light intensity control knob to the right and adjust the brightness of the microscope's visual field.



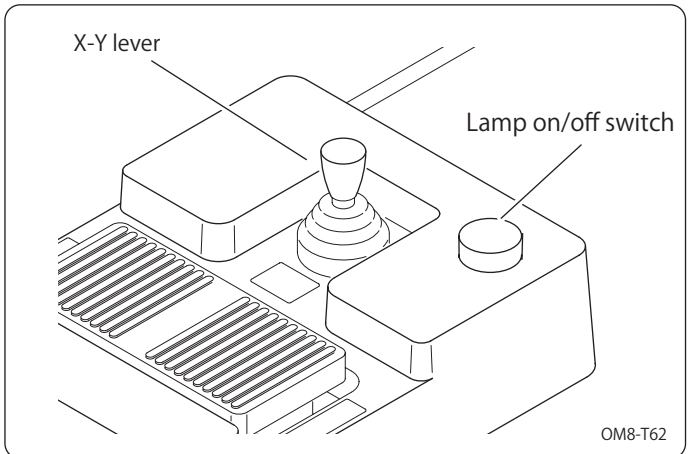
Operation

5. Stepping on the front or back of the foot switch unit's focus switch, adjust the focus on the target location.



6. Operating the foot switch unit's X-Y lever, move the microscope's visual field to the target location.

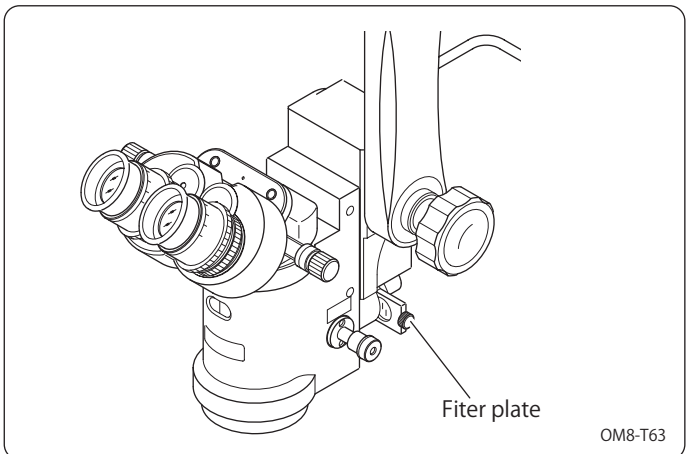
- To operate the X-Y lever, tilt it in the direction that you want to move the microscope's visual field. Thus, if you want to move the visual field to the left or the right, push the X-Y lever down to the left or the right; if you want to move the visual field diagonally, push the lever down diagonally in the desired direction.
- Each time the foot switch unit's lamp on/off switch is pressed, the lamp goes either on or off.



7. If necessary, select a filter by pushing or pulling out the filter plate.

You can choose from the blue cut, retina shield, and only permanent heat-absorbing and UV filters.

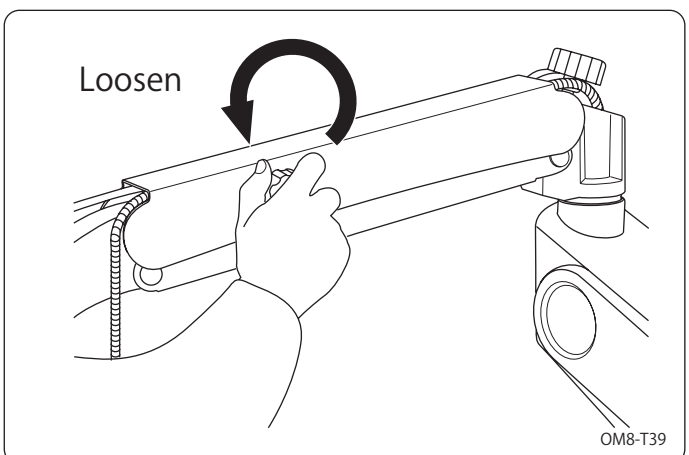
8. Following operation, center the X-Y device according to the instructions in the "Centering" section of the "Preparations for Operation", then turn off the power switch.



Manual Microscope Unit

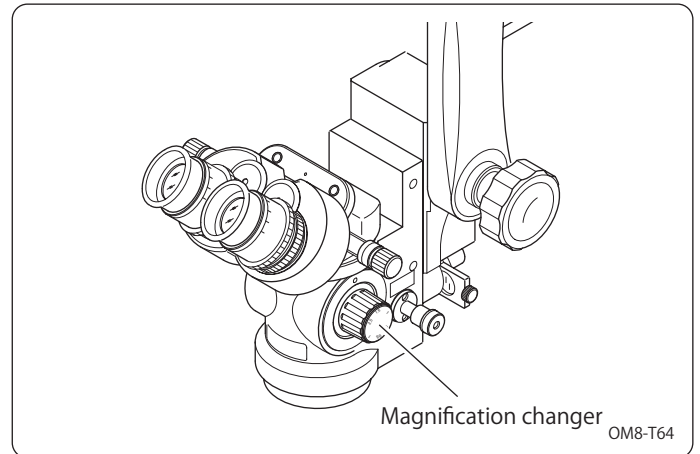
1. Turn the vertical movement locking handle on the side of the counter-balanced arm counterclockwise, loosening the counterbalanced arm. Move the microscope near to the location on the patient where the surgery or treatment will take place.

2. Looking into the microscope, use the handle to slowly raise the counter-balanced arm until the target location enters your field of vision. Then tighten the vertical movement locking handle, locking the arm in place.

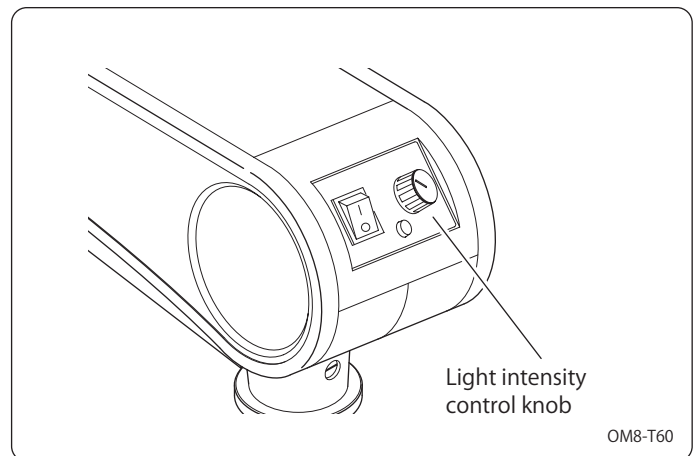


Operation

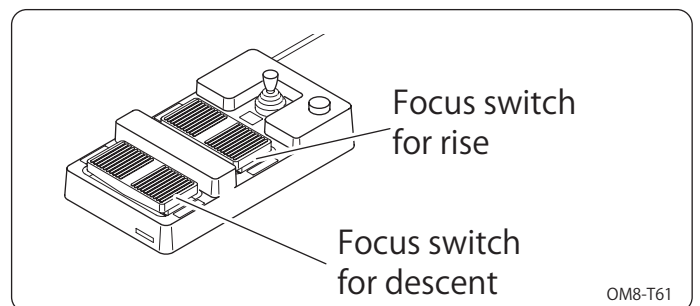
3. Turn the magnification change knob and maximize the magnification.



4. Turn the microscope light intensity control knob to the right and adjust the brightness of the microscope's visual field.

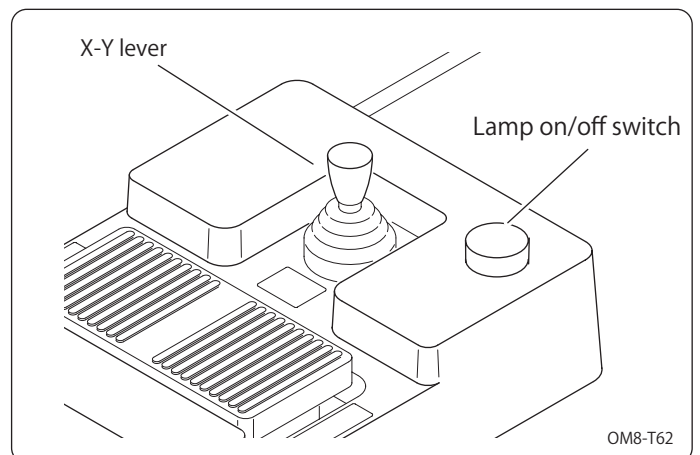


5. Stepping on the front or back of the foot switch unit's focus switch, adjust the focus on the target location.



6. Operating the foot switch unit's X-Y lever, move the microscope's visual field to the target location.

- To operate the X-Y lever, tilt it in the direction that you want to move the microscope's visual field. Thus, if you want to move the visual field to the left or the right, push the X-Y lever down to the left or the right; if you want to move the visual field diagonally, push the lever down diagonally in the desired direction.
- Each time the foot switch unit's lamp on/off switch is pressed, the lamp goes either on or off.

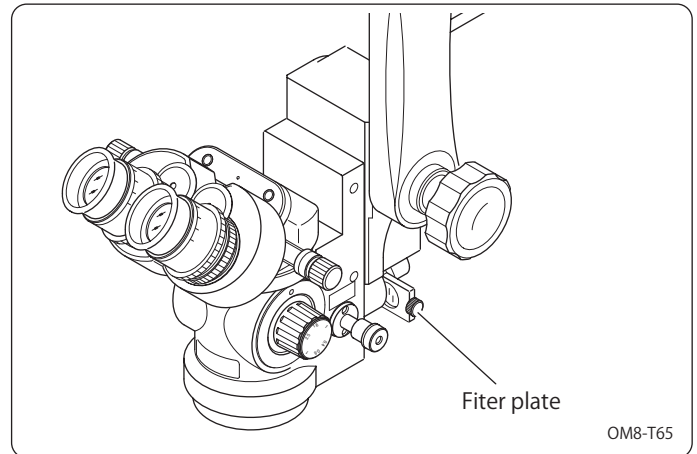


Operation

7.If necessary, select a filter by pushing or pulling out the filter plate.

You can choose from the blue cut, retina shield, and only permanent heat-absorbing and UV filters.

8.Following operation, center the X-Y device according to the instructions in the "Centering" section of the "Preparations for Operation", then turn off the power switch.



■ The Red Reflex Illumination Function

● With the OM-8, it is possible to use the coaxial illumination alone or the coaxial illumination together with the red reflex illumination.

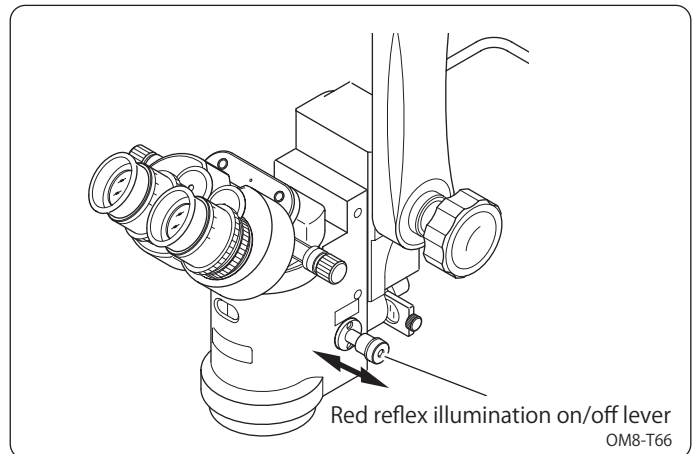
- The red reflex illumination on/off lever is used to either apply or block the red reflex illumination.

The lever on :

The coaxial illumination together with red reflex illumination is available.

The lever off :

The coaxial illumination alone is available.

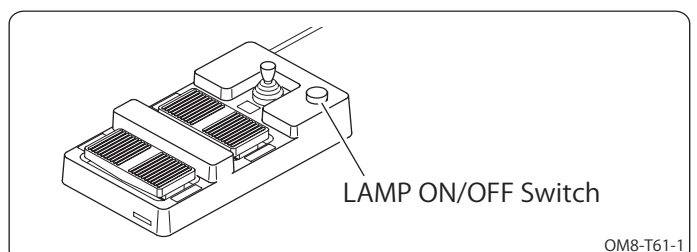
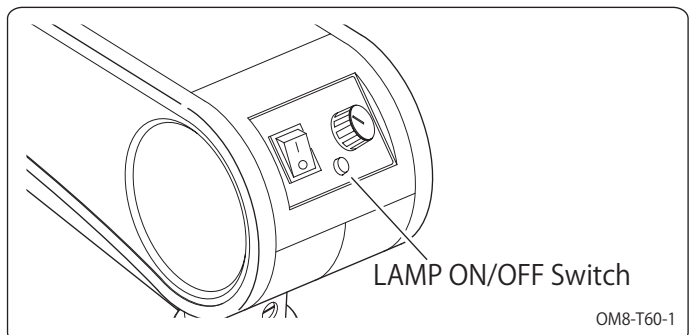


■ LAMP ON/OFF Function

● The lamp of OM-8 in use can go off by pressing lamp on/off switches.

- Each time the control panel's or the foot switch unit's lamp on/off switch is pressed, the lamp goes either on or off. The lamp will go on when power is turned on even after power is turned off while the lamp goes off.

* Type II foot controller does not have a lamp on/off switch.



Replacing Consumables



Notes on Replacing Consumables

- Do not replace consumables unless you are experienced with the instrument.
- Turn the instrument power off , and remove the power cord from the wall outlet prior to proceeding.
- Do not pull the cord itself when removing the power cord.
- Be sure that your hands are not wet.
- Use only appropriate tools.

- Replace the consumables correctly by following the procedure below.

■ Replacing the Lamp

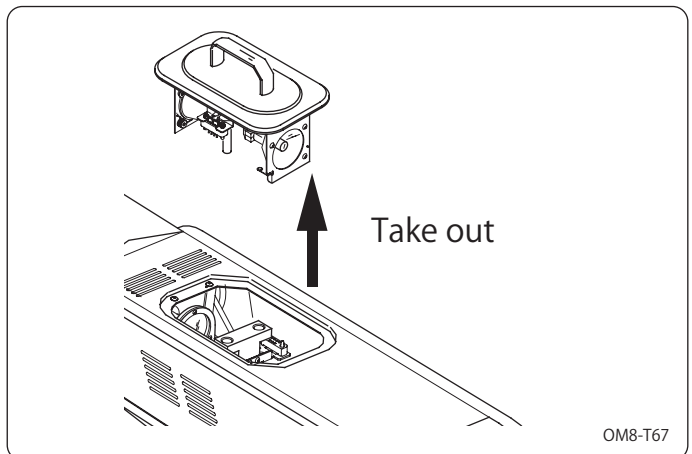


- Before replacing the lamp, turn off the power and wait for the lamp to cool.
- * The instrument and the lamps are hot immediately after use; burn injuries may result.
- Use lamps with the ratings (O91-02 : 15V, 150W) designated by our company. Do not use any others.
Burn injuries or breakage of the OM-8 may result.

- Be sure to maintain the lamps in both lamp units working. That way one lamp can be used as a backup in case the other lamp burns out during operation.

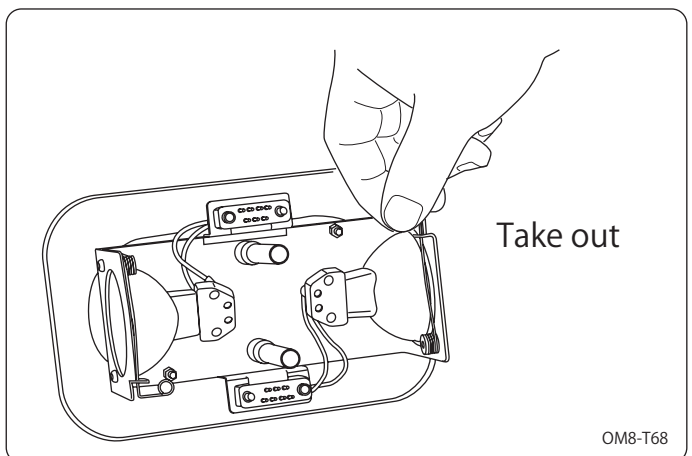
1. Turn off the power switch and pull the power cable plug out of the socket.
 - If the lamp was just in use, turn off the microscope light intensity control knob and let the lamp cool for 15 minutes.

2. Take out the lamp unit from the counter-balanced arm.



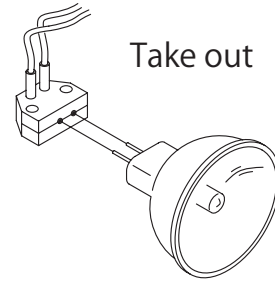
3. Remove the bulb retaining spring from the hook and take out the lamp together with the lamp socket.

*If the lamp retaining spring is stretched too much, it will lose its resilience.



Replacing Consumables

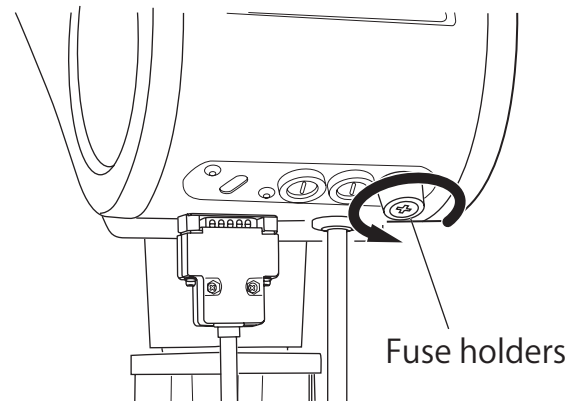
4. Take the lamp out of the socket and replace it with a new one.
5. Put the lamp and socket back in place, and insert the lamp unit back



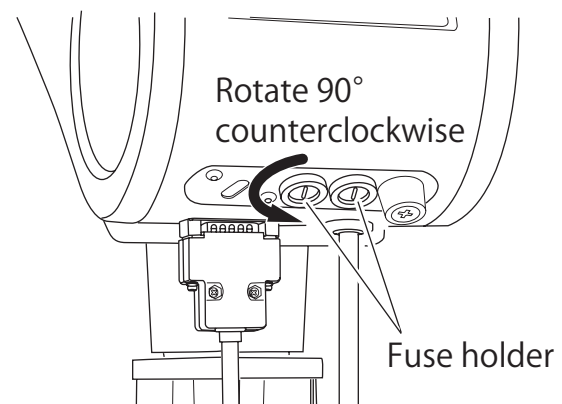
OM8-T69

■ Changing the Fuses

1. Press the "O" side of the power switch, turning power off. Pull the power cable plug out of the socket.
 2. Using a plus screwdriver, loosen and remove the fuse holder marked 250V 15A at the back of the lamp arm by turning it counterclockwise.
 - The fuse will come out together with the holder.
 3. Replace the fuse (with one of the correct rating). Then put the fuse holder back in place, and secure it by turning it clockwise with a plus screwdriver.
 4. Using a minus screwdriver, rotate the fuse holder 90° counterclockwise and pull out the fuse holder at the back of the lamp arm.
 - The fuse will come out together with the holder.
- *Order fuses through us or our distributor. (Not commercially available)



OM8-T70



OM8-T71

Maintenance and Servicing / Storage and Transport

■ Disinfection



- Disinfect the Sterilizable caps before surgery.

- The Sterilizable caps can be disinfected by EOG, or autoclave.

■ Caring for the Instrument



- Turn the instrument power off , and remove the power cord from the wall outlet prior to proceeding.
- Do not pull the cord itself when removing the power cord.
- Be careful not to get water on the power cable plug, the fuse holder area, the arm area, or the microscope unit. It could cause malfunctioning or some other problems.

- Remove the dirt from the main unit's surface by wiping it off with a sort, dry, clean cloth that will not leave any fibers.
- *Whenever a "cloth" is mentioned in the procedures below, it means a cloth with the qualities mentioned above.
- If there is dirt that can't be wiped off with a dry cloth, wipe it off with a cloth moistened with cold or lukewarm water, then wipe again with a dry cloth.
- If there is dirt that still won't come off, wipe it off with a cloth moistened with a neutral cleaning agent thinned with cold or lukewarm water, wipe off the cleaning agent with a cloth moistened with cold or lukewarm water, then wipe again with a dry cloth.
- * Do not use organic solvent (such as thinner, benzine, acetone, toluene, and ethyl acetate) or bleach to clean the instrument. This may damage the painted surfaces or the resin components.

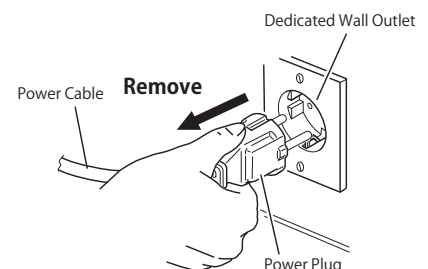
■ Scheduled Servicing

- This instrument (Operating Microscope) does not have a specific timetable for scheduled servicing; the instrument supervisor shall always check the instrument prior to and after use.

■ Storage and Transport



- If storing for an extended period of time, turn the instrument power off , and remove the power cord from the dedicated wall outlet.
- Do not pull the cord itself when removing the power cord;
 - * Fire may result.
- Remove any twisting and tension from the cords.



- The OM-8 dislike dust. Therefore, always keep it covered with the dust cover whenever it is not being used.
- Use the packing box provided and store under the following conditions:
 - Temperature: between -20 and +60 degrees celsius
 - Humidity: between 10 and 95%
- When intending to move the OM-8, first tighten all the lock handles and secure all the parts. Then move it. Strong jolts can affect the functioning of the OM-8 and cause other problems as well

Troubleshooting

- If a problem is experienced during use, go through the following checklist first and take relevant actions:



The instrument's main power switch is turned on, but the power indicator does not come on:

- ➔ • Check that the power cord is connected to the wall outlet as well as to the instrument securely.
See Connecting the Power Cord under Installation on Page 25.
- ➔ • Check to see if the lamp is blown, and that the other spare lamp unit is in working order.
If the spare lamp lights up, replace the blown lamp with a new one.
See Replacing the Lamp under Replacing Consumables on Page 34.
- Check to see if a fuse is blown.
- ➔ See Changing the Fuses under Replacing Consumables on Page 27.

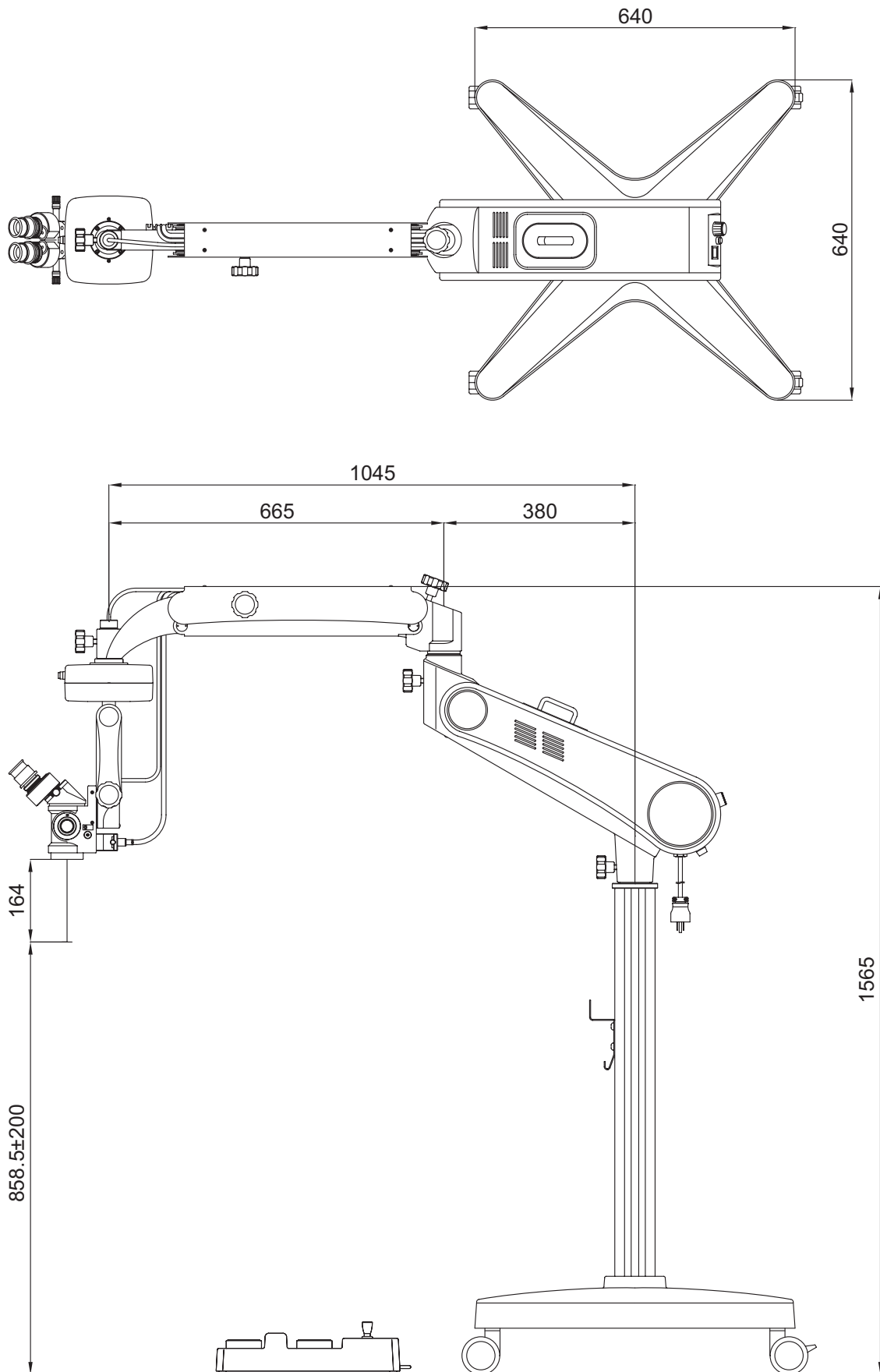
- If the problem does not relate to any of the above, contact our distributor or us.

Specifications

(1)	Microscope unit	Magnification changes	5 steps manual (for manual microscope unit) 5X motorized zoom system (for zoom microscope unit)
		Focal distance of objective lens	F=175mm
		Eyepieces	12.5X
		Binocular unit	45° inclined with converging optics F=125 mm
		Total magnifications	3.6X, 5.4X, 8.9X, 14.3X, 22.3X (for manual microscope unit) 4.28X to 21.4X (for zoom microscope unit)
		Actual view fields	ϕ 63, ϕ 42, ϕ 25.2 ϕ 15.8, ϕ 10.1 (for Manual Microscope unit) ϕ 52.5mm to 10.5mm (for zoom microscope unit)
		Working distance	164mm
		PD adjustment range	55mm to 75mm
		Diopter adjustment range	\pm 5D
		Focusing stroke	30mm
(2)	X-Y Coupling unit	X-Y movement stroke	\pm 25 mm in both X and Y directions
(3)	Illumination unit	Illumination method	Coaxial illumination by light guide
		Light source	Halogen bulb 15V 150W
		Light intensity adjustment method	Continuous
		Illumination field diameter	ϕ 54 mm
		Filters	Heat-absorbing, UV(permanent feature built-in), Blue-cut, Retinal protection
(4)	Stand, Arm unit	Type	Floor stand type
		Arm extension	1045 mm
		Balance arm vertical stroke	400 mm
		Base size	640 mm X 640 mm
(5)	Others	Weight	About 82kg (Different depending on the specification)
		Power source	AC100V, 120V, 230V 50/60Hz
		Power input	220VA
		IP classification of the foot controller	IPX8

External Views and Dimensions

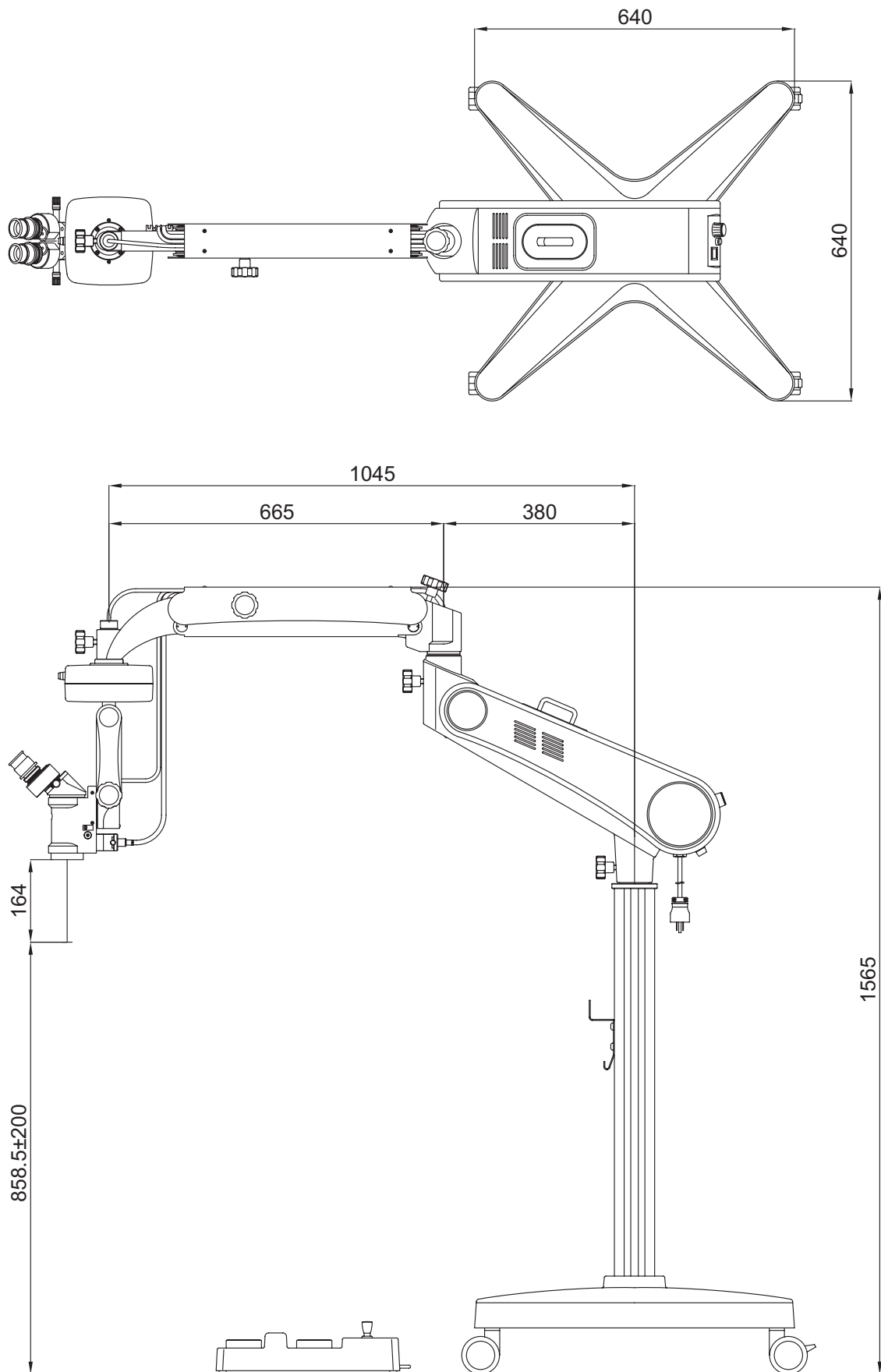
Manual Microscope Unit



OMR-T73

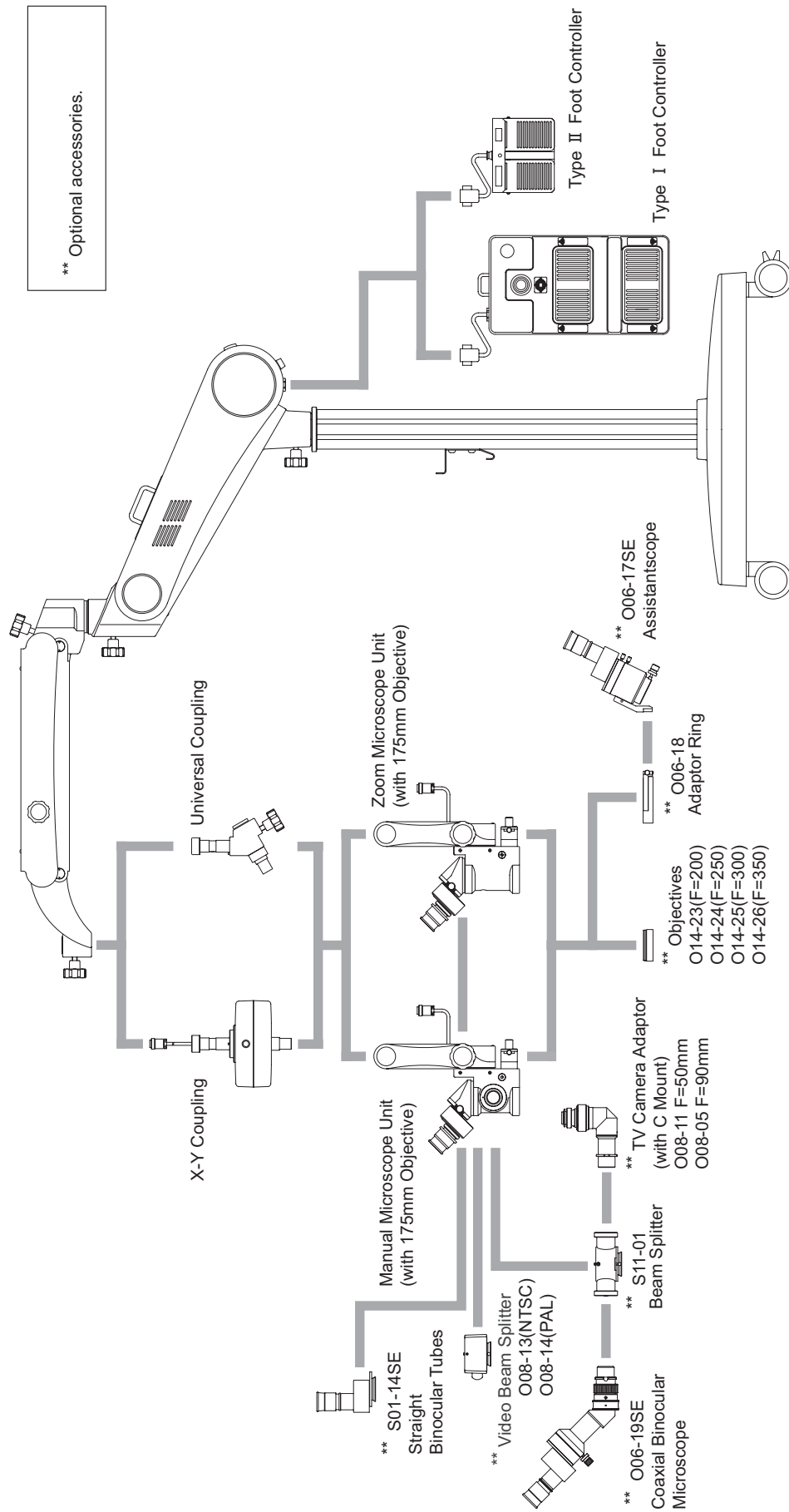
External Views and Dimensions

■ Zoom Microscope Unit

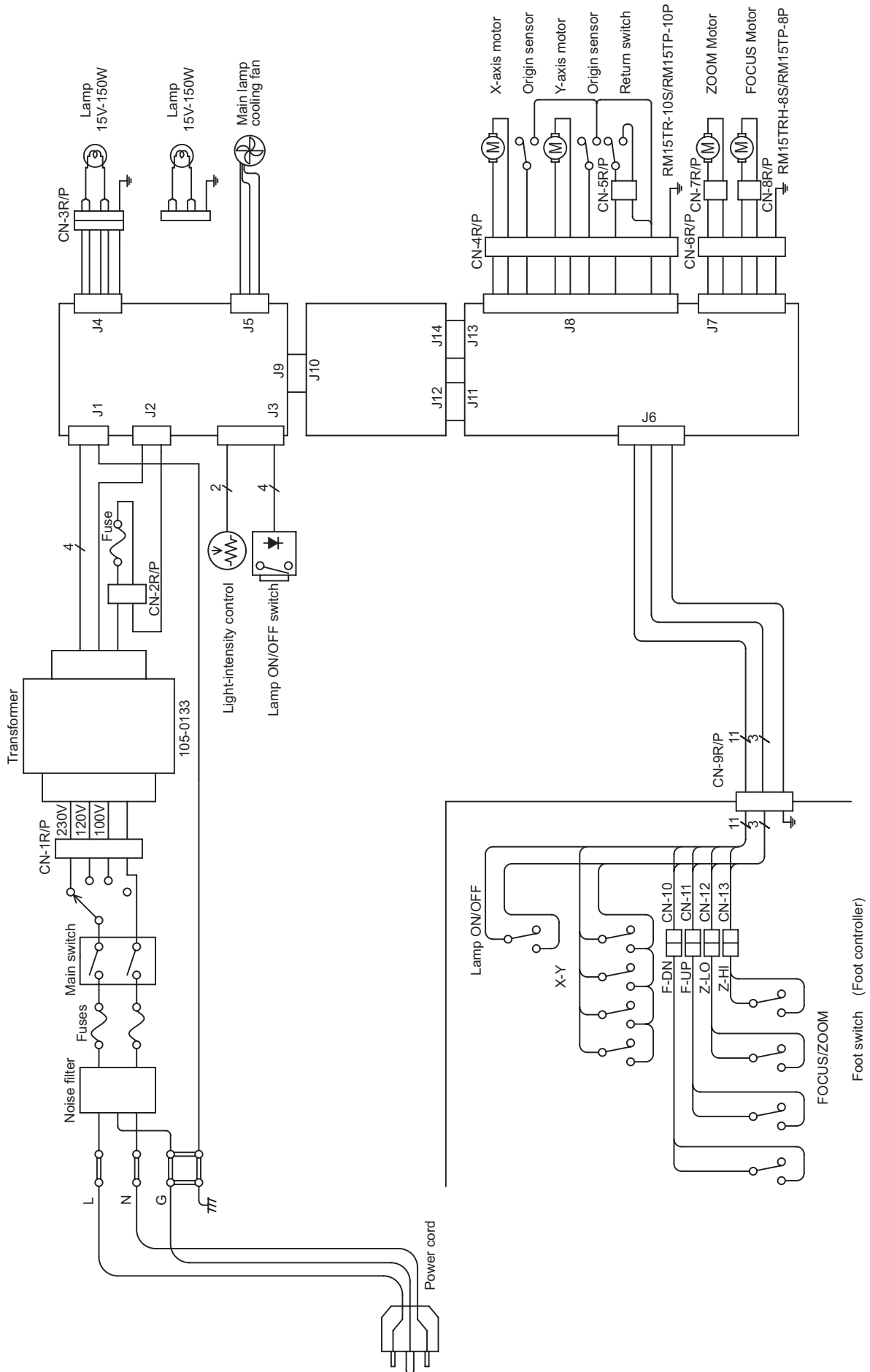


OM8-T74

System Chart



Schematics



Environmental Conditions

● Installation location

		Indoor, away from direct sunlight
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● Operating environment

	Temperature	+10 to +35° C (ambient temperature)
	Humidity	30 to 75% (no condensation)

● Storage environment

	Temperature	-20 to +60° C
	Humidity	10 to 95% (no condensation)

Device classification

● Device classification

	Classification according to the method of protection against electric shock	Class I device
	Classification of the applied part according to the degree of protection against electric shock	Type B
	Operation mode of the device	Continuous operation

EMC Declaration of Conformity

Note: Medical instruments require special precautions regarding EMC (Electro-Magnetic Compatibility). Install and use this instrument in accordance with the EMC information provided below.

Note: Mobile and portable Radio Frequency (RF) communication devices may interfere with the operation of the medical instruments.

Guidance and manufacturer's declaration – Electromagnetic emissions

Table 1

The OM-8 is intended for use in the electromagnetic environment specified below. The customer or the user of the OM-8 should assure that it is used in such an environment.

Emissions Test	Compliance	Electromagnetic Environment - Guidance
RF emissions CISPR 11	Group I	The OM-8 uses RF energy only for its internal function; its RF emissions are extremely low, and will not cause any interference in nearby electronic equipment. The OM-8 is suitable for use in all establishments including domestic establishments and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.
RF emissions CISPR 11	Class B	
Harmonic emissions IEC 61000-3-2	Class A	
Voltage fluctuations / flicker emissions IEC 61000-3-3	Complies (230V only)	

EMC Declaration of Conformity

Guidance and manufacturer's declaration – Electromagnetic immunity

Table 2

The OM-8 is intended for use in the electromagnetic environment specified below. The customer or the user of the OM-8 should assure that it is used in such an environment.

Immunity Test	IEC 60601 Test Level	Compliance Level	Electromagnetic Environment – Guidance
Electrostatic discharge (ESD) IEC 61000-4-2	$\pm 6\text{ kV}$ contact $\pm 8\text{ kV}$ air	$\pm 6\text{ kV}$ contact $\pm 8\text{ kV}$ air	Floors should be wood, concrete, or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30%.
Electrical fast transient / burst IEC 61000-4-4	$\pm 2\text{ kV}$ for power supply lines $\pm 1\text{ kV}$ for input & output cords	$\pm 2\text{ kV}$ for power supply lines $\pm 1\text{ kV}$ for input & output cords	Mains power quality should be that of a typical commercial or hospital environment.
Surge IEC 61000-4-5	$\pm 1\text{ kV}$ differential mode $\pm 2\text{ kV}$ common mode	$\pm 1\text{ kV}$ differential mode $\pm 2\text{ kV}$ common mode	Mains power quality should be that of a typical commercial or hospital environment.
Voltage dips, short interruptions, and voltage variations on power supply input lines IEC 61000-4-11	$<5\%U_T$ ($>95\%$ dip in U_T) for 0.5 cycle $40\%U_T$ (60% dip in U_T) for 5 cycles $70\%U_T$ (30% dip in U_T) for 25 cycles $<5\%U_T$ ($>95\%$ dip in U_T) for 5 seconds	$<5\%U_T$ ($>95\%$ dip in U_T) for 0.5 cycle $40\%U_T$ (60% dip in U_T) for 5 cycles $70\%U_T$ (30% dip in U_T) for 25 cycles $<5\%U_T$ ($>95\%$ dip in U_T) for 5 seconds	Mains power quality should be that of a typical commercial or hospital environment. If the user of the OM-8 requires continued operation during power mains interruptions, it is recommended that the OM-8 is powered from an uninterruptible power supply or a battery.
Power frequency (50/60Hz) magnetic field IEC 61000-4-8	3 A/m	3 A/m	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.


Note: U_T is the A.C. mains voltage prior to application of the test level.

EMC Declaration of Conformity

Guidance and manufacturer's declaration – Electromagnetic immunity

Table 4

The OM-8 is intended for use in the electromagnetic environment specified below. The customer or the user of the OM-8 should assure that it is used in such an environment.

Immunity Test	IEC 60601 Test Level	Compliance Level	Electromagnetic Environment – Guidance
Conducted RF IEC 61000-4-6	3 Vrms 150 KHz to 80 MHz	3 Vrms	Portable and mobile RF communications equipment should be used no closer to any part of the OM-8, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter. Recommended separation distance $d=1.2 \sqrt{P}$
Radiated RF IEC 61000-4-3	3 V/m 80 MHz to 2.5 GHz	3 V/m	$d=1.2 \sqrt{P}$ 80 MHz to 800 MHz $d=2.3 \sqrt{P}$ 800 MHz to 2.5 GHz Where P is the maximum output power rating of the transmitter in watts (w) according to the transmitter manufacturer and d is the recommended separation distance in meters (m). Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey ^a , should be less than the compliance level in each frequency range ^b . Interference may occur in the vicinity of equipment marked with the following symbol: 

Note 1: At 80 MHz and 800 MHz, the higher frequency range applies.

Note 2: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

^a Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which the OM-8 is used exceeds the applicable RF compliance level above, the OM-8 should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as reorienting or relocating the OM-8.

^b Over the frequency range 150 KHz to 80 MHz, field strengths should be less than 3 V/m.

Recommended separation distances between portable and mobile RF communications equipment and the OM-8

Table 6

The OM-8 is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user of the OM-8 can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the OM-8 as recommended below, according to the maximum output power of the communications equipment.

Rated maximum output power of transmitter W	Separation distance according to frequency of transmitter m		
	150 KHz to 80 MHz $d=1.2 \sqrt{P}$	80 MHz to 800 MHz $d=1.2 \sqrt{P}$	800 MHz to 2.5 GHz $d=2.3 \sqrt{P}$
0.01	0.12	0.12	0.23
0.1	0.38	0.38	0.73
1	1.2	1.2	2.3
10	3.8	3.8	7.3
100	12	12	23

For transmitters rated at a maximum output power not listed above, the recommended separation distance d in meters (m) can be estimated using the equation applicable to the frequency of the transmitter, where P is the maximum output power rating of the transmitter in watts (w) according to the transmitter manufacturer.

Note 1: At 80 MHz and 800 MHz, the separation distance for the higher frequency range applies.

Note 2: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

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Original instructions

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- Contents of this manual and specifications of the product are subject to change without prior notice.
 - While every effort has been made to ensure the smooth operation of this product and accuracy of information in this manual, please contact us should you notice any problems, errors, ambiguities, or omissions.

Contact our distributor or our Sales Department for any enquires.



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